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ORIGINAL COMMUNICATIONS.

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AN OPERATION FOR STRAIGHTENING THE NASAL SEPTUM*

BY GREENFIELD SLUDER, M.D., ST. LOUIS.

Even at the present time when the older operations for straightening the nasal septum in adults seem to have been superseded by the operation of Professor Killian (the sub-mucous resection of the deformed parts), there is still a need for an operation suited to the conditions existing in children; one that can be performed quickly and easily, and in which there shall be the least possible interference with the integrity of the septum which has to play so important a part in the subsequent growth and development of the nose.

In the course of the past eight years I have performed the operation now to be described twenty-four times in cases of the highest grade of deflection of the septum; five of these operations were on adults, and nineteen on children.

In twenty of the cases the crest of the deformity followed a horizontal or nearly horizontal direction; in four it was vertical or nearly vertical.

One case in a youth of eighteen, and a foot-ball player, was operated on for a horizontal deformity; after four months he sustained an injury which resulted in a vertical deformity which I saw, for the first time, six months later.

As is well known a capital difficulty in getting satisfactory results in septum straightening is that the parts do not remain permanently in position; this, of course, is due to the springiness of the tissues, usually of the cartilage. In Fig. 1 the drawing of

* Read before the Throat and Ear Club, St. Louis, December 6, 1905.

the septum represents a horizontal deformity which is to be straightened by an operation.

The points of greatest spring or resiliency will be represented by the apices of the angles, at 1, 2 and 3. In order to overcome this resiliency, I make three cuts, along these ridges, through the entire thickness of the septum extending the full length of the deformity, or a little more if possible. See Fig. 2. This I do with a small straight knife with a rather thick blade to give the necessary strength. In most of the cases in children the knife is

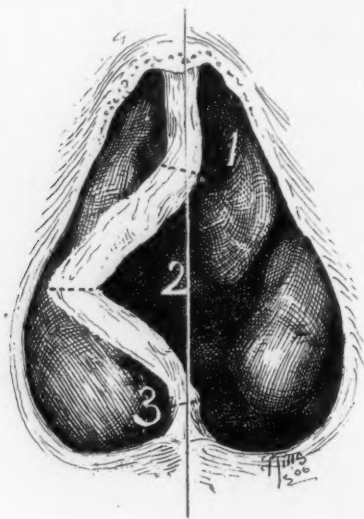


Fig. 1.

sufficient to cut through any bone that it may be necessary to divide. If, however, the bone is too hard to be divided by the knife, I use the Asch punch. The cuts are made from whichever nostril may offer the greater accessibility, according to the position of the deformed parts. The same general scheme of operating holds good for the vertical deformity.

The septum viewed from the side will then present a series of cuts as shown in Fig. 2, lines 1, 2 and 3. The portions between lines 1 and 2 and between 2 and 3 will then

have become two strips which have been cut entirely free except as they remain attached at their anterior and posterior ends. These strips are now freely movable and, on introducing the tip of the finger, are readily adjusted to the same plane as the remaining portion of the septum, or even somewhat beyond, so as to make them project into the other nostril. They will of course over-lap by just so much as the broken line 1, 2, 3 (Fig. 1), is longer than a straight line connecting

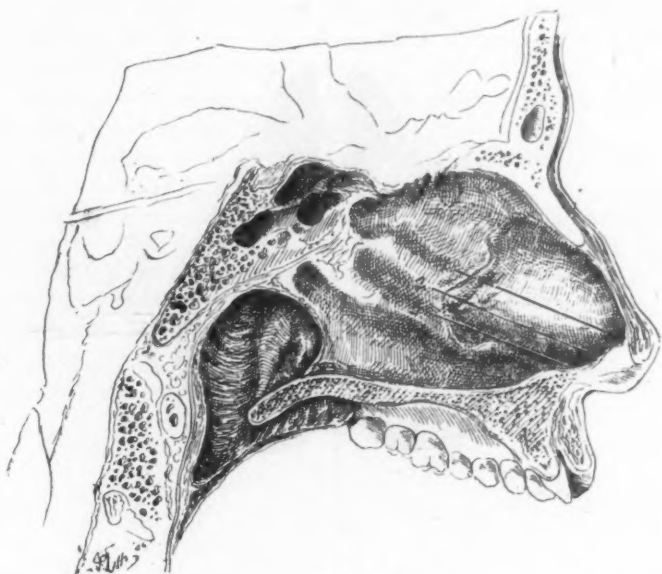


Fig. 2.

1 and 3. Compare Fig. 3. The loosened septum is readily held in a correct position by means of one of Asch's hollow perforated plugs or by a plug of gauze or cotton. Asch's hollow plug, of course, being more comfortable as permitting some breathing through that side of the nose. The plug is removed and cleansed from time to time, as, in the judgment of the operator, may appear to be indicated; the intervals varying from two to seven days according to the reaction and discomfort following the operation.

This discomfort is lessened, somewhat, by an alkaline saline solution snuffed through the nose several times a day, and by the use of some sticky ointment such as vaseline lead ointment externally and in the vestibule, which does much to prevent the tip of the nose from getting sore. In fact the discomfort which arises from the irritation of the vestibule and external nose is usually the worst that the patient has to suffer.

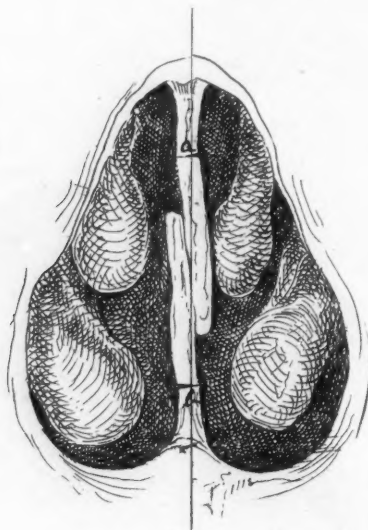


Fig. 3.

It is my practice to retain the plug in position from ten days to six weeks, and to keep the case under observation at intervals of three days to two weeks for six weeks longer.

If there be any tendency of the parts to spring back, the plug may be reintroduced.

The irregularity and local increase in thickness of the septum resulting from the overlapping of the parts, I let remain if possible.

If, however, this irregularity seems great enough to require trimming it down, I do it six months to a year later. I never interfere much earlier than this, because I feel that the greater

the over-lapping the better are the conditions for a firm and unalterable union. Then, too, the irregularities are found to diminish somewhat as the scar tissue becomes older and firmer.

In this relatively small number of cases, the results have been uniformly excellent and permanent.

The entire operation can frequently be performed in from three to five minutes, either under cocaine or general anaesthesia.

I have seen no sloughing or perforation following this operation.

Hemorrhage may be encountered if it be found necessary to cut through the anterior artery of the septum; it is effectually controlled as soon as the plug is placed in position, in what was previously the obstructed nostril.

This method I have found serviceable also for the less acutely angular deflections—the sigmoid deformity.

As is obvious from the description, there is no removal of tissue or sacrifice of ciliated epithelium or mucous glands, except where the strips overlap, as shown in Fig. 3. The detached strips, at 1 and 2, unite smoothly, without visible scar; the two overlapping surfaces become quickly adherent to each other with resultant formation of a firm fibrous union.

After the wound is healed there is no crusting.

[In the Z deformity this same principle of operating would require four cuts instead of three.]

2647 Washington Ave.

A Case of Paresis of the Crico-Thyroid Muscle.—VALD. KLEIN.—

Ugesk. f. Lager, Copenhagen, Page 271, 1904.

The paresis was probably due to a peripheral alcoholic neuritis in a man aged forty-eight years. The usual signs of an involvement of the superior laryngeal nerve were found, as the glottis formed a billowy line during intonation, the vocal cord flapping like a black sail before the wind. The sensibility was only reduced.

KIAER.

**DOES DENKER'S RADICAL OPERATION ON THE ANTRUM
OF HIGHMORE REPRESENT PROGRESS IN SURGERY
OF THE SINUSES?***

BY HERMAN STOLTE, M.D., MILWAUKEE, WIS.

Every nasal surgeon, who has often to deal with surgical operations of Chronic Empyema of the Antrum of Highmore, knows that the radical operations advised by Boeninghaus (*Archiv fur Laryngologie*, Vol. VI, 1892) and Caldwell Luc (1900, *Lecons sur les suppurations de l'oreille moyenne*), which were looked upon up to the present time as radical operations, that is to say, an operation that would lead in all events in a comparatively short time to a lasting cure, have not always given satisfactory and lasting results. These facts are due to four reasons:

1st. In resecting the facial wall (Canine Fossa) of the Antrum, according to Luc or Boeninghaus, it is with considerable difficulty that we are able to evacuate thoroughly all the diseased tissue from the anterior inner angle of the cavity, curetting through the hole made in the Canine Fossa. This portion of the Antrum, owing to the deep Alveolar Grooves and their strongly projecting bony ridges being the seat of most extensive pathological changes (large masses of granulations, polypous tissue, necrotic bone) will produce an abundance of granulation tissue with suppuration, interfering with the normal course of the healing process.

2nd. The permanent opening in the lower external wall, which we are obliged to make in this operation, does not, as we all know, involve the more anterior portion of the nasal wall, owing to the difficulty in getting to these parts with our cutting instruments through the opening in the Canine Fossa. In the same manner, the most posterior part of the lateral wall of lower middle meatus, on which we preserve the attached posterior part of the lower turbinated body, is usually not removed. On its anterior border remains hanging or detached a portion of the mucous membrane lining of the more middle part of the wall, through which the permanent opening into the nose is broken. This flap, if not thoroughly removed, is apt to be turned inwards by the following tamponade and placed towards the posterior inner angle of the antrum, forming here a kind of blind sac, closing up this corner from the chief

* Read before the Chicago Laryngological and Otological Society, February 13, 1906.

cavity and causing here a new source of suppuration. These remaining parts of the nasal wall of the Antrum, anteriorly and posteriorly, projecting into the nares like a stage side wing, prevent during after treatment a free view of the Antrum and control of the healing process, consisting in the application of Nitrate of Silver to the new formation of granulation tissue, especially in the anterior and posterior inner angle, and a thorough irrigation of the cavity. Hence, we fight in vain against a constantly renewing and obstinate suppuration, which lengthens unnecessarily the duration of the after treatment and prepares the ground for recurrence.

3rd. The floor of the Antrum, especially in its anterior corner with its marked pathological changes, needs an especially thorough evacuation of all diseased parts (granulations, polypi, necrotic portions, etc.). Hence these parts showing after operation bare bone without any lining, require a long time to be covered again with a healthy lining, and are therefore, during that time subject to suppuration.

4th. The artificial opening to the nose, due to its location far back and due to the posterior part of the nasal wall, and the remainders of the mucous membrane wall attached to it, has a great tendency to grow smaller and smaller, and in time close up almost entirely, leaving a fistula which will certainly produce a recurrence in the same manner as in Luc-Ogston's Frontal Sinus operation. Several attempts have been made to improve Luc's method, and to overcome some of the difficulties in this operation. Boeninghaus advocated the formation of a mucous membrane flap out of the lower nasal wall, in order to cover the floor of the Antrum, hence shortening the healing process. His method of obtaining this flap through the facial opening by first breaking down the bony internal antral wall from the mucous membrane, makes it extremely difficult to obtain the desirable unlacerated flap.

Dr. P. L. Friedrich (*Deutsche medicinische Wochenschrift*, 1904, No. 37) in order to overcome the difficulties in dealing with the ill-reputed anterior inner angle of the Antrum, advocated the open method which consists in making a curved incision in the groove of the Ala Nasi and, from the middle of this incision, a perpendicular one running outward and downward, half an inch in length; then resection of the bony junction of the nasal and facial wall of the superior maxillary bone around the Apertura Pyriformis, outward, continuing into the Canine Fossa, posteriorly continuing to the anterior portion of the nasal wall; eventually, also resecting

the anterior portion of the lower turbinate. After a careful suturing of the external wound, the author claims to have no visible scars or other facial disfigurements. The principal objections to this operation are the possibility of visible scars due to the liability of secondary infection, and the insufficient access to all parts of the cavity through the comparatively small opening.

Kretschman (*Münchener medicinische Wochenschrift*, 1905, No. 1) attacked the anterior inner angle of the Antrum by extending the gingival labial incision from the second molar to the Frenulum Labii Superioris, adding two rectangular small incisions on either side and upwards. He then exposed the facial antral wall, extending the incision to the Apertura Pyriformis, then detaching the mucous membrane of the nasal floor, and external nasal wall of the lower meatus. Beginning at the Apertura Pyriformis, he inserted afterwards a strip of gauze between the detached mucous membrane and the nasal wall. Then followed resection of that part of the nasal wall corresponding with the lower meatus, thereby preserving the most anterior portion. The formation of the flap out of the detached mucous membrane of the lower meatus; and placing this on the floor of the Antrum and fixing it by means of a firm tampon inserted through the nose, completes the operation. Kretschman does not sacrifice the lower turbinate on account of its important physiological functions, and does not close the oral wound in order to facilitate the after treatment. Healing of the wound and restoration of the antral cavity to a healthy condition takes place in about six weeks. Kretschman profiting by Friedrich's experience, that no disfigurement will occur, even by sacrificing the bony boundary of the Apertura Pyriformis recommends, for the future operation, the complete removal even of this part.

One year later, Professor Denker of Erlangen (*Archiv für Laryngologie u. Rhinologie*, Vol. XVII, No. 221 and following) put in practice this idea of Kretschman. His method, varying in several principal points from Kretschman's method, represents a combination of Boeninghaus', Luc's, Friedrich's and Kretschman's methods, uniting in one method all the conspicuously advantageous points of each. Mucous membrane incision is immediately below the gingival labial field, beginning from above the second molar, and extending to within one-fifth of an inch of the Frenulum Labii, then running one-third of an inch upward. The soft parts including the Periosteum are then lifted upwards, by means of an elevator, the skeleton thus being laid free, including the Apertura Pyriformis.

The mucous membrane of the lower meatus (lateral wall and outer part of the floor) beginning on the very edge of the Apertura Pyriformis and extending back one and one-half inches, is then lifted by means of a bent, blunt elevator. A small strip of gauze is inserted between the mucous membrane and bony lateral nasal wall. The resection of facial wall is then carried out to such an extent that a perfectly free view of all parts of the cavity is secured, and digital exploration is possible. After thorough removal of the diseased lining and morbid contents of the Antrum by curettment, especially along the floor excluding the healthy, simply thickened parts of the lining, the resection of the nasal wall of the Antrum is carried out, beginning on the lower and lateral edge of the Apertura Pyriformis, in a backward direction, and by means of a chisel and bone forceps. If the pathologic changes in the Antrum are very pronounced and the Ethmoidal cells and Sphenoidal Sinus are also affected, the resection should be extended into the Infundibulum, followed by curettment and opening of the affected sinuses. The lower turbinated body having been resected in its anterior two-thirds as a preliminary operation, especially when the same is strongly developed, especial stress should be laid upon the fact that every particle of the bony ridge between the floor and the Antrum and the lower meatus be chiseled or bitten away, so that a perfectly smooth surface results. From the detached mucous membrane wall of the lower meatus, Denker forms a rectangular flap one and one-quarter inches long and one-half inch high (or higher, in case the bony wall has been removed up to the Infundibulum). The flap starts just behind the Ala Nasi. It is then turned over into the antral cavity and fixed upon the perfectly denuded floor by inserting iodoform gauze tampons through the nasal opening. The exact closure of the oral wound by suture finishes the operation. The packing is removed in four or five days through the nose without any pain or discomfort. This is followed by daily repeated washing of the cavity with normal salt solution, by means of a big catheter abruptly bent, or by means of a soft rubber bulb, the tip being inserted directly into the cavity.

The ease of the after treatment is the most striking feature in Denker's operation. The patient is practically independent of the physician after the packing has been removed, a point apt to be of some importance in dealing with out-of-town patients, or patients whose time is limited. There is no painful removal of the packing or daily removing of the latter, as the permanent opening is so large,

that the patient himself can insert the tip of the rubber bulb into the cavity with the greatest ease, and is able to cleanse with the current of the solution every part of the cavity, as the floor of the lower meatus is continuous with the mucous membrane of the new-formed lining of the antral floor, thus representing one smooth surface devoid of any projections of bare bone; the pain during the after treatment, as in Luc's operation, is excluded. Immediate closure of the oral wound, which is permanently healed after four or five days, is a great improvement over the open treatment of Kretschman; i.e., through the mouth cavity, with its danger of irritation and reinfection. Another great advantage of this operation is, that it gives us the large nasal opening far in front, so that we are able to inspect the posterior half of the cavity directly with the eye the anterior one-half with a small rhinoscopic mirror, and thus to keep down every pathological growth of granulation or of polypous tissue. Any accumulation of pus behind the lateral part of the anterior nasal wall, or in the anterior inner angle of the cavity, is also excluded. Further, the large opening located well to the front renders the occurrence of a relapse impossible. In the Luc operation, we are sometimes confronted by the condition, that the permanent nasal opening of the Antrum, due to the unfavorable location being out of view, especially when the patient has not been able to come regularly for the after treatment after some time, has nearly closed or so narrowed, that a thorough draining of this cavity, or even inspection is out of the question. Owing to the impaired drainage, the suppuration becomes increased, the granulations within the cavity proliferate; and in a short time, we have to resort to a new operation for a cure of the recurrence, a fact which confronts us likewise now and then in Luc-Ogston's Frontal Sinus operation. These are depressing experiences; hence we ought to be only too glad to know of a method which renders these recurrences absolutely impossible.

One of the objections offered to Denker's operation is its magnitude. I must confess out of my own experience in three cases, that the simplicity of this operation in comparison with Luc's or Boeninghaus' is most surprising. In Luc's operation, we all know how difficult it is to remove through the hole in the Canine Fossa so much from the lateral nasal wall, as should be done; or in Boeninghaus' operation, how difficult it is to form an unlacerated complete mucous membrane flap of the nasal wall. All these steps are done with the greatest ease and much more quickly in Denker's

operation. The hemorrhage is not greater than in Luc's operation. So far as the dread of possible subsequent disfigurement (falling in of the cheek) is concerned, I think nothing can convince you more to the contrary than a glance at this patient. This lady had been suffering for the last 18 years from sinus empyema of both sides. While on the left side, only the Antrum and Anterior Ethmoidal cells were diseased without any odor existing; on the right side, a very pronounced disease of all the sinuses except the Sphenoidal existed and the pus ran down constantly in streams, the stench being simply fearful. Polypi developed gradually. She had been operated on by Senn of Chicago about 12 years ago. The patient came under my care about the 12th of November, 1905. In a preliminary operation, the anterior two-thirds of the right lower turbinated body was removed, and on the 25th of November the radical operation on the right frontal Sinus, Anterior and Posterior Ethmoidal cells and Antrum of Highmore were performed. The Frontal Sinus operation was done according to Tilley's (London) or Coakley's (New York) obliteration method. It left a small retraction of the scar, which I am going to overcome by paraffin injection in the near future. The Antrum operation according to Denker was done under the same anaesthesia. In the removal of the lateral nasal wall and the formation of the flap, the lack of difficulty in comparison with Luc's and Boeninghaus' operations struck me; but yet I hope we can shorten the time of breaking down the lateral wall considerably by using especially suited forceps, which I am going to have made. The removal of the strong lateral pillar of the Apertura Pyriformis, which has a diameter of nearly half an inch, requires a very sharp chisel and careful chiseling together with the use of strong bone forceps. Too violent chiseling is liable to produce fractures in the body of the superior maxillary bone. The Antrum cavity was without pus five weeks after the removal of the dressing; the suture in the gingival labial fold healed by first intention, the frontal Sinus required about eight weeks to become obliterated by granulation. Three weeks ago, I began treatment of the Ethmoidal cells and Antrum of Highmore on the left side, which, due to the mild character of the pathological changes, required only minor operations; on the one hand, curetting out the Ethmoidal cells, and on the other hand, breaking down the membranous part of the antral wall of the Infundibulum, by means of Myles' excellent cutting Trochars. The hole is made large, so that the patient can do the syringing of the antrum herself. Slight secretion is still present on this side, but only of mucous character. Practically

also this side is healed. The preserved periosteum on the right side has already formed new bone, and no disfigurement whatever has resulted from this very extensive operation.

It is self evident that I do not recommend Denker's operation for every case of chronic Antrum Empyema. A considerable number of chronic cases of not long duration, especially when the Antrum is secondarily diseased, thus acting as a reservoir for the pus, issuing continually from the frontal sinus, are curable in a relatively short time by Gerber or Onodi's method through the Infundibulum. As the instrument for this, I warmly recommend Myles' Cutting Trocars. The decision, whether to resort to this method, depends on careful examination of the case, especially the absence of well-marked pathologic changes of the lining (absence of the shadow in transillumination). Further, about 60 to 70 per cent of all chronic Antrum cases can be cured by employing Rhèti-Claoué's method, so nicely described and warmly advocated recently by Dr. Otto Freer. But there remains a large number of cases with such degeneration of the lining of the cavity, the floor being necrotic, the periosteal lining representing such exuberant growths of degenerated polypous and fibrous tissue, that the cavity appears like a mass of flesh, the interspaces being filled with cysts or stagnated, putrified, cheesy, and foul-smelling pus. When we have to deal with such a condition, we are mistaken in hoping to cure such Antrum cases by the intranasal route. We have to resort to a radical operation through the facial wall. If this is necessary, there is no reason why Denker's operation should not be chosen, which is simpler and easier to perform than Luc's or Boeninghaus' operation. The safer control of the healing process secures the shortest, easiest and most painless after treatment and involves the guarantee of a quick and lasting cure with no possibility of recurrence even in the gravest and most inveterate cases.

Goldsmith Bldg.

(For discussion of this article see page 256.)

SOME EVILS OF MOUTH BREATHING.*

BY C. P. LINHART, M.D., COLUMBUS, OHIO.

In trying to find the origin of many cases of chronic pharyngitis, my suspicions were attracted to mouth breathing as one of the common causes of this complaint. With scarcely an exception, patients suffering from chronic pharyngitis and laryngitis have more or less difficulty in inhaling sufficient air through the nose. This is particularly noticeable when exercising briskly out of doors during the cold and damp season of the year. If anyone should take the trouble to observe the people on a cold winter morning as they walk to their places of business, he would be surprised at the number who are inhaling the cold, raw air through the open mouth directly into their lungs. The thin and delicate membrane of the pharynx and the larynx is utterly incapable of giving moisture to, and heating the air to its proper condition before entering the lungs. The cold air over-stimulates the vaso-motor nerve endings controlling the small capillaries of the throat. There is first a contraction and blanching of the membrane from the cold, followed by a relaxation of the capillary walls, and a pouring out of secretion from the mucous glands in this region. The work that this membrane is called upon to do is entirely beyond its capabilities, it becomes thinner, the patient complains of a dryness in the throat, and in course of time the result is a chronic pharyngitis.

The question as to the original cause of mouth breathing would seem a little difficult to answer. Very young children, I think as a rule, have little difficulty in breathing through the nose. It is only in later childhood, subsequent to the hypertrophy of the adenoid tissue in the vault of the pharynx, and hypertrophy of the tonsils, that the children begin to breathe through the mouth.

It seems proper to suggest that our habits of living are such as to bring about these very conditions. In the first place the children are often housed in over-heated and ill-ventilated rooms, and coddled in heavier wraps than is necessary for their health. This hot-house preparation illy prepares them for the vigorous and sudden changes that they undergo in passing from these warm rooms into the winter air. These sudden changes are probably a

* Read at the meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society, at Chicago, February 24, 1906.

strong factor in bringing about the congestion of the mucous membrane and underlying tissue of the turbinates in the nose, and increasing the hypertrophy of the glandular tissue in the pharynx.

"Does not the continual tropic house warmth actually reduce the tone of the tissues and make them more susceptible to bacterial invasion? The thought is naturally suggested that perhaps cold air has hygienic as well as therapeutic uses. We rather look upon hot weather as relaxing and destructive of vitality, and expect health with return of cold weather. Brook trout perish if the water they breathe is raised only a few degrees in temperature. There is enough in this matter to cause us to think about it a little. If so many cured tuberculous patients are now sleeping in cold air every night and living in it in the daytime too, as much as possible, perhaps the rest of us are only injuring ourselves by the opposite course. Only a few years ago the cold-air fiend who slept with windows wide open in the coldest winter, was considered a crank. Perhaps he will prove to have been the only sensible one among us, and was merely imitating the ways of his ancestors who had practically no way of warming their houses."

As it is the function of the turbinates to supply sufficient moisture to the air and properly regulate its temperature as it passes into the lungs, it naturally follows that the air must be made to pass through the nose over the turbinates in order that they may be in proper condition to do their work.

One of the probable evils of mouth breathing in early life, is the raising of the palatine arch by undue pressure from the inhalation of air through the mouth. This excessive arching of the hard palate, which is also the floor of the nose, encroaches upon the space in the nose. During development the septum would naturally grow so as to fill the space allotted to it in the nose. Now that space, as has been shown, is consequently narrowed in its perpendicular diameter, and it naturally follows that the septum will bend to one side or the other. Where a person has a high-arched palate we expect to find either a deflected septum in the shape of a large curve, or a sharp kink or spur. The latter is nearly always seen along the line where the vomer joins the perpendicular plate of the ethmoid.

A popular impression prevails that deflections and spurs of the septum are caused by a blow on the nose some time during development. While it is easy by suggestive questioning to get a history

of an injury to the nose; in almost every instance of deflected septum, I usually find that when the patient volunteers the information of a blow on the nose, that the injury has been sufficient to cause a considerable thickening of the whole septal wall, from the consequent inflammation, which is not found in ordinary septal deformities.

There is no doubt that mouth breathing, with its consequent high arching of the palate is responsible for the peculiar shaping of the face, seen in many children suffering from adenoids. It is also a factor in causing the protruding and mis-shapen teeth of the upper jaw. Dr. C. A. Hawley tells me that in looking over twenty-nine plaster casts of corrected deformities of the teeth from narrowing of the upper jaw, he found nineteen with histories of operations for removal of adenoids. These cases were taken at random, and he further states that he had no doubt that some of the others had nasal or post-nasal obstruction. Dr. Hawley called my attention to another interesting point; that a high-arched palate and narrow posterior nares might have the relation to each other of cause and effect.

The secretion of the nose is more or less bactericidal. The dust in the air on entering the nose is filtered through the moistened vibrissae, and also becomes deposited on the viscid membranes of the turbinals, consequently the mouth-breather, lacking this natural protection, is more susceptible to bacterial invasion, and on account of the discomfort and annoyance of breathing through the mouth will not inhale as deeply as he ought. Therefore, there is not sufficient oxygenation of the blood and consequent lack of body tone.

There is no doubt that considerable disturbance to digestion is caused by allowing the muco-purulent material from the nasopharynx to get into the stomach, in fact, it is next to impossible to prevent young children from swallowing it. I had a patient who had been troubled with indigestion for several years, tell me that it entirely disappeared after being relieved of this annoyance from a chronic nasal catarrh. I venture to say that the fermentative changes which take place in the mouth of a mouth-breather, have an injurious effect on the salivary secretions sufficient to interfere materially with the digestion of starchy foods, and this in turn would lessen the stimulative effect on the peptic glands of the stomach.

Breathing through the nose develops the muscles that dilate the nostrils, consequently we find narrow nostrils in mouth-breathers. Furthermore where the obstruction in the nose is confined to one side it naturally follows that the narrow nostril will be on that side.

I have had a number of cases of pharyngeal irritation that I could trace to no other cause than a partially occluded nostril, and it seemed to me that the air volume being so much heavier on one side gave it a cork-screw motion as it passed down the pharynx. This whirling and uneven pressure of the air might cause an irritation of the throat by producing an unusual dryness in one part and too little in another. This would account for the little inspissated lumps of mucous found in this class of cases, in the vault of the pharynx. Of course, one must take into account the fact that so large a volume of air passing in one nostril would not get the heat and moisture that it would from both sides more nearly equal in caliber. Whatever the cause, there is always a marked improvement where the entrance of air through each side of the nose is more evenly balanced.

If we accept the foregoing statements as facts, it is easily understood how the habit of breathing through the mouth is so difficult to overcome, and the importance of keeping a clear passage way in the respiratory tract of children is apparent and it becomes evident that whenever there is any hindrance to normal breathing even from a transient "cold," it should have immediate attention. Any obstructions should be removed by surgical means, and the patient encouraged in his effort to breathe through the nose. Even later in life when the bones of the mouth and nose are completely ossified, the openings of the nares can be enlarged by proper breathing exercises.

The following are recommended for keeping the nose in a normal condition: Cool living rooms; well ventilated sleeping rooms; cold bath, especially for the neck and spine; dry clothing; simple foods; regular habits; moderate daily exercise and exclusive nasal breathing.

106 East Broad Street.

INDICATIONS FOR THE SUB-MUCOUS RESECTION OF THE NASAL SEPTUM.*

BY ROBERT LEVY, M.D., DENVER, COLO.

The following thoughts can hardly be dignified by the term "paper." I should prefer to class them under the heading of a "note dealing with the indications" for the above-named operation. Still if one recognizes the importance in all operations for their *raison d'être* no term can be considered too dignified for this subject.

The question of the necessity for the performance of any operation must always be one of prime consideration, the indications being controlled by definite symptoms, which must be actually dependent upon physical and objective signs rather than upon obvious anatomical change in structure. It was many years ago that Harrison Allen, whom we will always respect as a student of anthropology and anatomy, stated that less than five per cent of all human individuals possess absolutely normal noses structurally. Cases of nasal stenosis with its attendant evils, are undoubtedly in many instances due to deviated septum. On the other hand, there are many cases of nasal obstruction, of which the septum, though slightly deviated to one side or the other, is less commonly the cause than are such conditions as intumescent or hypertrophic rhinitis or adenoids in the naso-pharynx.

A condition which is very commonly responsible for difficult nasal respiration, reflex disturbances or naso-pharyngeal discharge, is the presence of exostoses and ecchondroses from the septum. These are nearly always associated with more or less deflection, and it is frequently a nice point in judgment to determine whether a large spur or ledge alone is sufficient to produce the symptoms, or whether the deflection is sufficient to materially increase the difficulty.

In deciding the line of treatment and the character of the operation indicated, one must not only determine the nature of the difficulty to be overcome, but must also take into consideration the effect upon the patient. Operations should be chosen, all things being equal, with a view to simplicity; the shorter the operation, the less shock and discomfort to the patient.

* Read at the meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society, at Chicago, February 24, 1906.

The sub-mucous resection presents the ideal method for the correction of certain deformities of the septum, which no other operation has ever offered. The history of this operation is a remarkable story and one is astonished that this procedure did not become popular many years ago. The principle upon which its performance depends, has been spoken of in medical literature for many years, and it needed only a certain amount of thought upon the part of enthusiastic rhinologists to rapidly develop its value. It is also rather amusing to read the many discussions and controversies between such men as Victor Lange, Krieg, Hajek, Zarniko, Freer and others, which have appeared from time to time in Fraenkel's *Archiv*, as to priority or as to some peculiar modification in technique. All of these men and many others are deserving of much laudation, but it seems a rather simple matter to be magnified by extensive discussions. Each one has added his share to the literature, to the perfection of technique, to the improvement of instrumentarium; and to each one we acknowledge our indebtedness. I believe, however, that we owe to Killian the greatest debt of gratitude for having in fullest detail called to our attention the value of this procedure. I should, however, hesitate to name this operation "Killian's" or call it by the name of any other individual. Few men have given us anything but method of operation, while Killian's article published in the *Archiv*, 1904, describes extensively the indications and contradictions, in addition to many other important subjects, including operative technique.

The attractiveness of this operation to the rhinologist is that it is a surgical procedure of the greatest nicety and delicacy. It has none of the elements of mutilation that other operations have, nor is it the simple excision of a structure which so frequently characterizes rhinological operations. On this account patients have frequently been subjected to it when other and simpler remedies or methods might have answered the purpose. Freer (*Journal of the American Medical Association*, December 5th., 1903) reports in fifty-one cases, only three in which exostoses and ecchondroses existed. A large proportion of my cases in which slight or marked deflection of the septum existed have shown spines or ledges of decided thickness which were readily removed by the simple sawing operation. Long before sub-mucous resection of the septum was practised to the extent that it is to-day, innumerable cases of spurs or spines were sawed off resulting in completely satisfactory results. In my own cases it was not difficult to de-

termine the thickness of the septum and thus avoid perforations. It was only in those instances in which the septal ledge complicated a marked deflection that the results were unsatisfactory. In all cases in which the deflection is slight, while the exostoses and the ecchondroses are large, I still operate with the saw. The healing may at times be somewhat prolonged, but with ordinary care in after treatment, the mucous membrane is restored over the wounded surface and, notwithstanding theory to the contrary, there usually results a normal functioning mucous surface over the site of the operation.

A class of cases which causes much annoyance is those attended with intumescence or hypertrophy of the turbinates. It is often a nice point to determine whether a portion of the turbinate shall be removed or not. Given a moderate deflection of the septum I prefer to remove this first before interfering with the important respiratory function of the nose as performed by the turbinate bodies. However, I recall two instances in which the result of the septal operation was nil. It became necessary in order to restore the patients to fairly good nasal respiration to remove a portion of the turbinate afterwards. Whether the alteration in the turbinate bodies as indicated by intumescence or hypertrophy is the result of septal deviations is to my mind a question which has not yet been definitely determined; nor does it always follow that the removal of a portion of the inferior turbinate when indicated results in any harm. Here again I should urge careful weighing of the problem before operating upon the septum first and the turbinate afterwards. One operation, the removal of a small portion of the hypertrophied turbinal tissue, will often suffice.

In the National Jewish Hospital for Consumptives situated at Denver, I have seen frequent examples of the beneficial effect of establishing free nasal respiration. Patients with tuberculosis demand much attention to the upper respiratory tract and often in moderately advanced cases of tuberculosis the establishment of free nasal respiration and the removal of irritating discharges from the nose and naso-pharynx prove an important factor in bringing about general improvement.

A moderate deflection of the septum is of less importance in the production of Eustachian tube catarrh than posterior turbinate hypertrophy or naso-pharyngeal adenoids. The indications are to correct the turbinal or naso-pharyngeal trouble rather than the slight septal deflection.

In the production of reflex neuroses, including ocular troubles, sharp posterior spurs pressing upon the middle turbinate or upon the opposite inferior turbinate are of more importance than a moderate co-existing anterior deflection. It is a fairly simple procedure to remove these spines and the result will be entirely satisfactory.

A contraindication to all operations upon the nasal septum which, in my opinion, is of great importance, is the existence of syphilis, either hereditary or acquired. There is no structure which breaks down more readily in a syphilitic individual than cartilage. This is illustrated by the frequent nasal deformities that we find as a result of this affection in the nose. Under no circumstances should one perform an operation for the correction of a septal deflection in a patient suffering from lues until he has definitely satisfied himself that the patient has been under sufficient treatment to avoid a destructive process following. Lack of attention to this detail will in all likelihood result in an unsightly nasal deformity.

In conclusion I do not wish to detract from the importance and the immense value that the sub-mucous resection of the nasal septum offers us. It is the most ideal operation for deflected septa. It is, however, an operation requiring a decided perfection of manual dexterity and perfect technique. It is also an operation requiring rather more endurance and consequently producing somewhat more shock on the part of the patient.

Therefore, I desire to reiterate that before deciding upon its performance it is incumbent upon us to carefully weigh the symptoms and to exercise the nicest of judgment so that it cannot be charged against us, as so frequently has been charged in the past, that rhinologists operate because of some simple anatomical abnormality, rather than because of definite disturbing symptoms.

California Bldg.

A CASE OF RHINOLITH.*

BY THOMAS FAITH, M.D., CHICAGO.

As cases of rhinolith are not common and as few of them appear in the literature, I have ventured to report the following case, with some general remarks upon the condition.

Case.—Miss G., aged 17, consulted me in November, 1905, on account of nasal obstruction, a foul-smelling discharge from the nostrils, and almost constant pain in the right side of the head and face. This condition had been present for the past six months. Three months previously she had been examined by a rhinologist, and was told that she required a nasal operation, but she declined the proposition.

Examination showed the left nasal passage to be clear. The right passage was filled with pus, which after removal revealed a fleshy looking mass, granular in appearance, and apparently occupying the posterior half of the inferior and middle meatus. On introducing a probe, the mass was found to be firm and unyielding, and gave a sensation as of a bony growth, covered with soft tissues. Probing caused profuse bleeding. With the rhinoscopic mirror, a dirty yellow or grayish mass could be seen, projecting into the post-nasal space on the right side; the mass was surmounted with granulations.

As the patient was very nervous, I made an appointment for another examination, at which time I intended removing a portion of the mass for microscopic examination, as I considered it to be a probable sarcoma. Accordingly two days later, under cocaine and adrenalin, I attempted to remove a portion of the mass with a pair of nasal cutting forceps, and failing in this, I employed a sharp curette, and after removing quite a quantity of granulations and desiccated mucus, I encountered a gritty mass, and soon determined its true nature.

I at once set about trying to remove the stone, but I could accomplish this only after crushing it, which I did with a firm pair of curved forceps.

The stone was of a dirty gray color, and had for its nucleus a pearl button $\frac{5}{8}$ of an inch in diameter, which, the mother later

* Read before the Chicago Laryngological and Otological Society, February 13, 1906.

remembered, had been introduced by the child when about two years of age. The weight of the entire stone, including the button, was about 100 grains. With the exception of a slight decrease in the size of the inferior turbinal posteriorly, there was no structural damage done to the nose.

The nasal floor and walls were freed of granulations with the curette, and dusted with nosophen. The discharge and odor at once subsided and the recovery was uneventful.

There are several points of interest in connection with the case: 1st. The length of time the foreign mass was present without giving rise to symptoms, about fifteen years; 2nd. The lack of structural changes resulting from its long sojourn in the nose; 3rd. The way in which the true nature of the mass was hidden from view, and from detection with the probe, by the abundant granulations and the layer of desiccated mucus with which it was covered; 4th. The extremely foetid odor of the discharge, which reminded me very much of the odor sometimes emitted from a malignant growth, and which no doubt was due principally to the decomposing epithelial debris from the nasal mucosa, as there was no bone necrosis at any point.

Rhinoliths we know are collections of calcareous material which have usually formed around some foreign body, piece of carious bone, fragment of inspissated mucus, or fragment of clotted blood which has remained in the nasal passages for a considerable period. If a foreign body acts as the nucleus, it may have been introduced through the anterior nares by the patient, it may have been forced through the posterior nares during vomiting or choking, or may have penetrated the tissues, as in the case of lead bullets or particles of stone or metal during an explosion. If it is a fragment of carious bone, it may be a sequestrum from the septum, turbinate, or outer nasal wall, as these loose pieces of bone are occasionally found in the nasal passages. Sometimes rhinoliths are found to contain a cavity instead of a nucleus. They are usually found in adults, though they are occasionally present in comparatively young children; and they may vary in weight from a few grains to several hundred grains. They have been known to have remained in position for thirty or more years.

The symptoms of rhinolith in general may vary from a slight one-sided discharge to grave structural changes. Foetid discharge hemorrhage and obstruction to breathing are symptoms common to most cases. Deviation of the septum to the opposite side, and

distortion, with prominence of the malar bone, have been observed by Baber, and Knight mentions perforation of the palate and facial paralysis as having occurred.

Disturbances of smell, tubal, and middle-ear diseases are sometimes occasioned by these obstructions. Seiler says that they have been observed in both nostrils at the same time, and that they occasionally penetrate the soft tissues and become covered with mucous membrane.

The diagnosis of rhinolith may be easy or may be difficult, depending somewhat upon the size, position, and the secondary changes which it may have occasioned.

The conditions with which it is most likely to be confounded are, caries, malignant growth, and osteoma. Thorough washing of the nares and the careful use of the probe will usually reveal the nature of the mass if the granulations have been removed. In the probing, the physician will be aided, somewhat I believe, if the probe is used posteriorly, through the pharynx, as well as anteriorly. Also the use of a sharp-pointed probe will be found of service, as it will penetrate the granulations, mucous membrane, or desiccated mucus which may hide the stone and its gritty feel.

—103 State Street.

(For discussion of this article see page 262.)

A Case of Laryngocele.—HERHOLD.—*Deutsche Med. Wchnschr.*, Leipzig, October 27, 1904.

A trumpeter, 24 years old, experienced a sudden pain in the left side of the neck, since which time a swelling occurred, situated between the hyoid bone, the cricoid cartilage, and the sterno-mastoid muscle. When the patient used his voice the tumor increased in size and became painful. A smaller swelling was noticed on the right side. The swellings could be reduced in size by pressure. Laryngoscopic examination revealed nothing abnormal.

These tumors, first described by Virchow, consist of a dilatation of the ventricle of Morgagni.

YANKAUER.

A NEW INSTRUMENT FOR EXCISION OF THE TONSILS.

BY JAY G. ROBERTS, M.D., OSKALOOSA, IOWA.

I have long been impressed with the inefficiency of the usual instruments for the performance of tonsillotomy. The many modifications of the guillotine and the snare are all unsatisfactory and leave much to be desired. The ordinary tonsillotome, as well as the snare, almost invariably leave a small portion of diseased tonsil behind, resulting in a recurrence of the trouble and the bringing of both the surgeon and the operation into disrepute. Especially have these instruments proved disappointing in the excision of the fibrous tonsils of adults and the so-called submerged tonsils, the class of cases which has given rise to the operation of cautery dissection, an operation which, while giving most excellent results, is far too painful and tedious for the routine practice. It is impossible to draw these tonsils out through the ring of the guillotine or the wire loop of a snare, even when the latter is reinforced by some device for forcing the wire over the tonsil.

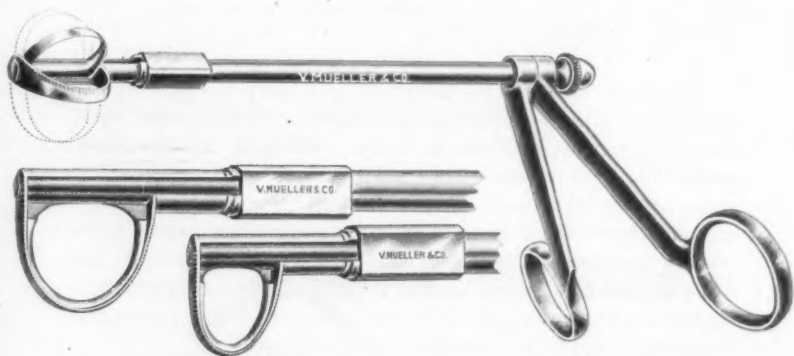
At my suggestion, V. Mueller & Co., of Chicago, have recently perfected an instrument, which they have named "The Roberts Tonsil Scissor Punch," and which has proven an ideal instrument in my hands, not only in the above class of difficult cases, but in all others.

Although originally designed to supplement the tonsillotome or snare for the removal of the diseased portion left behind by these instruments, it has come to supplant them entirely in most cases. As will be noticed by reference to the accompanying cuts, the cutting part of this instrument is patterned after the jaws of the old-fashioned steel trap, an instrument whose capacity for getting hold and holding on is well known. The force of the bite is directed outward toward the base of the tonsil, not inward and away from it. The depth of the bite is easily regulated by the pressure exerted on the handle of the instrument. The shape of the blades is such that they pass readily in between the pillars of the fauces, thus avoiding injury to these structures.

While originally designed to be used as a punch, removing the tonsil by a series of small bites, often the entire tonsil may be removed by a single stroke of the larger of the two sizes in which the instrument is made. In fact, I have come to use this size

almost exclusively, as it removes the tonsil cleanly and quickly with a minimum result of injury to contiguous structures.

It might be thought that a smooth-cutting instrument of this kind would be more prone to give rise to hemorrhage, but this is not the case. Indeed the very thoroughness of the excision lessens the liability to this occurrence. It is not the completely excised tonsil which gives rise to troublesome hemorrhage, but the one cut across as it were, its fibrous framework like a sponge holding open and preventing the contraction of the blood vessels. The absolute ineffectiveness of adrenalin in these cases, and the fact that in one case of troublesome hemorrhage, following removal by the guillotine, the hemorrhage ceased promptly upon the removal of the remaining portion of the tonsil with this instrument, tend to prove the truth of this statement.



Other so-called tonsil punches are heavy and clumsy. The cutting part is too thick. One can not get to the tonsil which is pushed ahead of the instrument. It is here that the peculiar "steel-trap" shaped blades come into play, encircling and embracing the tissues instead of crowding them away.

The instrument is reversible and can be set for right or left, up or down, and when set in the upright position makes an admirable uvulatomie. In order to reverse the instrument, remove the nut back of the handles, push the stem forward, then set the square back of the biting part in the direction desired and replace the nut. The change can be accomplished in a few seconds' time.

INSTRUMENTS FOR SUBMUCOUS RESECTION OF SEPTUM.*

BY WILLIAM W. CARTER, A.M., M.D., NEW YORK.

These instruments are presented with the idea of reducing rather than increasing the number required in this operation.

After making a vertical incision just behind the anterior border of the quadrangular cartilage on the side of the deflection, I use this combination instrument, serving the purpose of a sharp elevator, blunt elevator and curette.



Fig. 1. Dr. Carter's Sharp Elevator, Blunt Elevator and Curette.

The sharp curette serves admirably as a sharp elevator over the anterior third of the septum normally, and also in those cases where, from traumatism or ulceration, the perichondrium is more closely attached to the cartilage. The inclination of the blade causes it to shave off the fibro-elastic connections with the cartilage, instead of pushing them before it, thus insuring the greatest safety to the mucous membrane. The blunt end is small, gently curved, and made of malleable copper, so that it can be bent to conform to irregularities in the septum. It is used posteriorly where the mucous membrane is less closely attached to the cartilage.

Having elevated the membrane over the convex side, I come forward to the original incision and scrape through the cartilage with the curette. Through this opening, I elevate the muco-perichondrium on the concave side. I recommend this method of perforating the cartilage very highly, for I have used it for three and a half years with greatest satisfaction. There is practically no danger of injuring the membrane on the concave side.

The chief advantage in using this instrument is that it is well adapted for doing all of the most important part of the operation, i.e., the elevation of the mucous membrane, and no change of instruments is necessary during the whole procedure.

* Exhibited at the meeting of the Section on Laryngology and Rhinology of the New York Academy of Medicine, January 24, 1906.

The next instrument is a speculum, having blades two inches long. At the end of each is a stop bevelled anteriorly and falling off at right angles to the blade posteriorly. When opened, these make it a self-retaining instrument. The blades are joined to shafts, one of which slides over the other in such a manner that the pressure on the blades retains it automatically in any position to which it is



Fig. 2. Dr. Carter's Self-Retaining Speculum.

opened. It is easily opened or closed by pressure on the little thumb piece. (This is a convenient pattern for an examining instrument and is made shorter for this purpose.) This speculum is then introduced into the perichondrial sac, a blade on either side of the denuded cartilage.

The cartilage is then removed with this pair of punch forceps.



Fig. 3. Dr. Carter's Punch Forceps.

The blades are on shanks, that are only one-fourth the length of the long arms of the lever, assuming that the short arms are prolonged backward in a straight line. Great force can be exerted by a comparatively slight pressure on the handles. The backs of the blades are bevelled so that they can be introduced without a speculum, if it is desired, and can reach up into the angle of the perichondrial sac and grasp the septum far back. The handles are attached to the shafts at a more acute angle than the usual nasal

angle, so that we have full view of the field while operating. These forceps will remove the thin bony septum as well. This bony septum that I hold in my hand was removed from an old skull, and though the tissue is much harder than a fresh specimen would be, you see that I can punch off pieces with perfect ease. It is necessary, however, to attempt only small bites each time. This instrument has been used in forty-one operations and has never been sharpened. The distinct advantages to be gained by using these forceps are: 1st. They will remove any kind of septum, the following difficulties being overcome: sharp angular deflections, echondroses, calcification and ossification of the cartilage, and deviation of the bony septum. 2nd. We can see exactly what portions of the septum are causing obstruction and remove them. Working with these instruments in the manner described, I usually complete the operation in from twenty to thirty minutes.

60 West 50th Street.

Accessory Thyroid on the Posterior Third of the Tongue.—O. C.

SMITH (Hartford, Conn.)—*N. Y. Med. Journ.*, Oct. 29, 1904.

This growth appeared in a female, 50 years of age. At the age of 45, a similar growth was removed; but it reappeared in two years, and was again removed. Consequently, this was the third time it caused annoyance. The voice was nearly inaudible; the patient was unable to articulate and swallowed with great difficulty.

Upon drawing the tongue forward, an ovoid tumor was seen springing from the posterior third of the tongue obscuring the epiglottis and rising nearly to the roof of the pharynx. The mass appeared to be about 5 c. m. in length and two-thirds as broad. It was firm to the touch, somewhat elastic, but was neither tender nor painful.

Its removal was accomplished under cocaine anæsthesia with the ecraseur. Little bleeding followed this method. Section of the growth showed it to be an accessory thyroid of the tongue. These tumors are not common.

LEDERMAN.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, January 24, 1906.

T. P. BERENS, M.D., Chairman.

PRESENTATION OF CASES.

A Case of Laryngotomy for Chronic Hyperplasia. By J. W. GLEITSMANN, M.D.

This case was presented because of several interesting features: 1. The diversity of opinions of previous attendants in regard to the diagnosis and the difficulty of settling it definitely. 2. The recurrence of the infiltration in the larynx and trachea after it had been finally recognized to be of a non-malignant type. 3. The various and manifold measures adopted and necessary to remove the tumefaction of the throat and to establish patency of the upper air passages.

The patient, a man of middle age and good constitution, entered my service at the German Hospital May 1st, 1904, and his previous history was kindly supplied by Dr. Danziger who treated him at the German Dispensary, and by Dr. Horn who treated him at his office and at the Hospital alternately. At the Dispensary, he was under observation three months, and in the beginning showed a small ulceration on the left false cord, about the nature of which there was some doubt. The diagnosis lay between syphilis or tuberculosis. As at the examination no lesion of the lungs was found, iodide of potassium was administered, but as granulations developed and the surrounding tissue became infiltrated, intramuscular injections of salicylate of mercury were resorted to, also without tangible benefit. In the latter part of April, 1904, he became suddenly hoarse and complained of cough and pain in his throat, which slowly progressed up to the time of his entrance into the hospital. There was no loss of weight, and there was absence of all other symptoms. At the laryngoscopic examination May 1st, a diffuse dense swelling was seen involving the larger part of the

left side of the larynx and also implicating the left ventricular band. The movements of the vocal cords at that time were not impeded, the arytenoid cartilages were free from infiltration and always remained so except for a short period in the fall.

A small piece was removed May 12th (as had been done before by previous attendants), but did not furnish a satisfactory microscopical diagnosis, and therefore on May 23rd a second attempt was made to obtain a larger specimen. Happily, the excision forceps grasped the whole tumor and removed it in its entirety. June 5th, all symptoms had disappeared, and the patient left the hospital apparently cured. The specimen was carefully examined by Dr. Louis Heitzmann, who pronounced it a chronic infiltration with hypertrophy.

Returning from my summer vacation October 15th. I found the patient again at the hospital and learned that September 10th, a gradual onset of dyspnoea had occurred, with severer attacks from time to time, and marked loss in tone and quality of voice, and considerable loss of flesh. An examination of the lungs had been made and they were found to be normal. When I took definite charge of the patient on October 29th, I found an entirely different aspect of the larynx. The former swelling at the left upper half had not recurred: but there was considerable narrowing of the glottis, due to immobility of the left half, which remained stationary midway between adduction and abduction; and as far as the limited space allowed, the eye could detect a sub-cordal swelling on the left side, still more encroaching on the respiratory space.

My first plan was to dilate the glottis, not so much as a remedial measure, but in order to be able to inspect the lower regions and form an opinion about the extent of the sub-cordal and tracheal lesion. As a blunt triangular dilator of my own construction, after the model of the late Dr. Elsberg's nasal speculum, did not give the desired result, for a number of days I introduced Schroetter's hard rubber laryngeal bougies of increasing size. At first this treatment ameliorated the condition, but at my visit of November 7th, I found the patient, without apparent cause, suffering from a high degree of dyspnoea necessitating immediate low tracheotomy. The latter was followed by double-sided broncho-pneumonia, from which the patient was entirely recovered two weeks later.

Although I could not coincide with the views advanced to me, that an involvement of the trachea proper was the cause of the dyspnoea, I determined to settle this point before performing a

laryngotomy, which I had been convinced would be ultimately required, and on November 22nd, I made a lower bronchoscopy, which showed the trachea to be free to the bifurcation. December 1st, laryngotomy was performed at which I had the assistance of Dr. Kiliani and the valuable advice of Dr. Delavan, who kindly accepted my invitation to be present, being the most competent person on account of his well-known familiarity with the laryngeal cancer problem and Semon's method of laryngotomy. The incision extended through the whole larynx and trachea down to the tracheal canula; the ossified thyroid plates were separated in the median line by a Gigli saw, and the sub-cordal infiltration was thoroughly excised. In the upper part of the trachea slightly thickened, isolated places were found and easily removed. Although for future breathing purposes it would probably have been better to have excised also the immovable left vocal cord, we desisted from doing this, as the patient was exceedingly anxious to retain whatever could be preserved of the voice. The skin wound was closed after the thyroid plates had been united by silver sutures, the ends of which were carried outside at each side of the throat. One morning they had disappeared, and when on December 15th, the wound positively had to be opened to remove the wire in the cartilage, it was found that although the vertical adaptation was perfect, a slight lateral dislocation had taken place in the patient. The recovery was uneventful. The first attempt at transverse line, probably accounting for the hoarse voice of the removal of the tracheal cannula on December 20th could not be borne by the patient, but on the 25th it was definitely discarded, and the wound was allowed to heal by granulation. The patient was discharged January 15th, 1906, with a very small fistulous opening. The gentlemen who have just examined the patient will have observed that at rest he breathes with comfort; that his voice is loud though possessing a certain degree of hoarseness; that there is no growth, no swelling visible, and that the left vocal cord is in the same position as it was at the end of October, 1905, due to a previous involvement of the crico-arytenoid articulation.

DISCUSSION.

DR. DANZIGER said that the case had come to him at the German Dispensary, and as Dr. Gleitsmann had read his notes in regard to it there was little for him to say. As had been stated, the patient was started on iodide of potassium, and this was followed by granulations and rapid infiltration, the whole process taking place

in four weeks' time, so that the microscopic diagnosis of inflammation of the tissues of a chronic type seemed peculiar. The growth itself developed within four or five weeks, the little ulceration developing into a real tumor and infiltrating the false vocal cords and the left side of the larynx. In this case, the clinical symptoms would speak for an acutely developed growth probably of malignant nature, while the pathological diagnosis, in absolute contrast to the clinical observation, declares the process to be a chronic inflammation. I hope that we heard the last chapter about the case tonight, but I do not believe so.

DR. DELAVAN said that he had had the privilege of witnessing this operation and could testify to the great skill with which it had been performed. The lack of proper coaptation of the divided halves of the thyroid cartilage, which Dr. Gleitsmann had referred to, was not an uncommon accident, and it was a matter of surprise that more care and ingenuity had not been shown in this part of the performance of a thyrotomy. After middle life, and especially when disease was present, the thyroid cartilage was apt to have undergone calcareous degeneration. The old-fashioned method of attempting to split the calcified thyroid with a cutting forceps, or bone forceps, or with a knife not strong enough for the work is certainly very clumsy and undesirable. Some years ago Prof. Clinton Wagner, who had performed the largest number of thyrotomies, of any one of his time, suggested the use of the rotary saw, a great advance upon any cutting appliance. The use of the saw had been followed with very good results.

In attempting to bring the edges of the divided cartilage together, accuracy of adjustment would be facilitated by the use of a proper guide. The latter might be made in a case where the thyroid was cartilaginous by making a small angular deviation in the median incision. Where the cartilage was calcified a somewhat large needle should be passed through its prominence before division and the holes thus made utilized later for the suture. The voice of the patient exhibited would improve in the course of several months after the operation and later much could be done for it by a good course of vocal instruction.

DR. CHAPPELL congratulated Dr. Gleitsmann on the results of this operation, and said that he had seen three cases of stenosis of the larynx due to inflammatory thickening. In all of these cases a tracheotomy had been performed, and the larynx put at rest. In one case the inflammatory thickening had subsided and the man

had a good coarse voice in two months. In the other two cases it was three months before the thickening disappeared. From his experience, therefore, if he had a similar case he would not do a thyrotomy quite so early as in the case just reported, but would depend first upon a tracheotomy and putting the larynx at rest.

Edematous Polyp of Inferior Turbinate in Extreme Youth. By
WENDELL C. PHILLIPS, M.D.

DR. PHILLIPS said that he presented this patient for the simple reason that it was very unusual to see a growth of this kind in so young a child. The boy was only 8 years old and had suffered from a speech impediment almost all his life. His pronunciation was very poor, but otherwise he seemed to be unusually alert. His mother says that at times he has attacks resembling petit mal, and will lose cognizance of his surroundings for a moment, but he does not fall and there is no twitching. He will suddenly stop, stand still for a moment, apparently unconscious of his surroundings, and will then recover himself and go around as usual. About two or three years ago he had an attack of double otitis media purulenta. He has also had a large mass of adenoids and large hypertrophied tonsils removed. At the time Dr. Phillips first examined the boy, a great deal of mucus was observed in his left nostril and what was supposed to be a foreign body, for a polyp in a child of this age was not suspected. After the adenoids and tonsils were removed, he attempted to remove what he had thought was a foreign body, but found instead that there was a large tumor in the naso-pharynx, and finally concluded that it must be a polyp. After several ineffectual attempts to remove it, the polyp was cut off at the pedicle with a pair of strong forceps, the growth falling backwards into the pharynx. This was done under ether. The growth was the size of an English walnut. It was hard and firm, and was attached to the posterior end of the inferior turbinated bone. Dr. Wright made an examination of the growth, and said that in young children there was a marked tendency to recurrence. This tendency had already manifested itself in this case, although it was only two months since the operation.

Pathological Report. Microscopic examination: This presents the usual appearance of an oedematous nasal polyp. It contains but little stroma, a few blood vessels with considerably lowly organized tissue around them. The age, 8 years, is very rare for this kind of growth. I think I have only seen one younger. I am under the impression that when oedematous polypi do form

before puberty they are more frequently attached to the inferior turbinate. After puberty they are almost always attached to the middle turbinate. I presume this has some relationship to the physiological fact that the erectile tissue develops in the inferior turbinate mucosa and renders it insusceptible to the infiltration with serum as in the middle turbinate where are found the typical mucous polypi.

DISCUSSION.

DR. CHAPPELL said that he had never seen a case of polypi at 8 years of age, but thought they were not uncommon about the age of puberty. He wished now to report on a case which he had showed before the Section two years ago, a girl with a large tumor in the naso-pharynx, which was removed. About two weeks ago the girl reported again with a recurrence of the growth. This was removed in the same way as the case just reported by Dr. Phillips. In several similar cases he had used a Gottstein curette with teeth, and had found it a very satisfactory method.

DR. W. W. CARTER said that about a year ago he reported a case of fibrous mucous polyp from the post-nasal space. The patient was a woman 19 years of age, and the polyp was a very large one. The doctor who referred the case to him said that the growth had been there for six years, and the mother said that it had existed six years prior to that, the child having been unable to blow through her nose since she was six or seven years of age. It was attached to the posterior end of the middle turbinate and was removed with a pair of adenoid forceps, after repeated attempts had been made to engage it in the wire snare. The growth had not returned at the time the case was reported, but about a month ago the patient returned and a similar but much smaller growth was present in almost the same spot. This was removed with the snare.

DR. NEWCOMB said that the youngest case of the kind that he had seen was in a boy 10 years of age. He had endeavored to follow the case up but was unable to do so. A considerable number of congenital polyps had been reported, but he had never seen a case. In the case of the boy referred to the polyp was attached to the middle turbinate in the usual position.

DR. DELAVAN told of a patient 6 years of age, where the growth was attached to the middle turbinate.

DR. ABRAHAM told of a little girl 9 years of age who had come to Dr. Delavan's clinic recently with two polyps which he had removed from the middle meatus of the left side.

The CHAIRMAN reported a case in a child of five years following for three years, in which the growth sprung from a spot on the septum opposite the middle turbinate. The polypus recurred several times after removal. The last polypus was removed a year ago and an ethmoiditis encountered. The ethmoid was curetted in that locality, and since that time there has been no recurrence.

Frontal Sinus Depression Obliterated by the Employment of a Paraffin Cast. By HOLBROOK CURTIS, M.D.

This case was interesting because of the fact that a solid paraffin cast had been used to fill up the depression instead of the hypodermic injection of paraffin. The patient, aged 43 years, had been referred to him in April, 1905, by Dr. Frank Markoe for operation for frontal sinus and antrum empyema. Since childhood she had suffered from chronic antrum disease and had undergone three operations, all of which had been unsuccessful. The antrum was treated through the old canine fossa orifice by enlarging and curetting, then the outer wall of the inferior meatus was removed and the cavity packed for three weeks through the nose. It was only within the last eighteen months that the frontal sinus was discovered to be involved. After the antrum was operated on, the frontal sinus was opened. The first incision was over the eyebrow and parallel with it. The sinus was found to be so large, and the posterior ethmoid cells to be so seriously involved and to have made such excursions laterally, that a further vertical incision was deemed necessary for better curetting and packing of the operative wound. The sinus was packed with wool for four months and obliterated, but there resulted an ugly scar and deep depression on account of the large portion of the anterior bony wall of the sinus which was removed. The wound was closed in August of last year. Four days ago the patient was anaesthetized and a plastic operation was undertaken to remove the cicatrix, and fill up the pyramidal depression. The scar was first excised and the lips of the wound elevated by the scalpel. A paraffin cast was made to fit the depression, its apex downwards. The skin was then drawn over the flat base of the cast and sutured. Primary union took place and the stitches were removed to-day, the fourth since the operation. The forehead now seems perfectly flat. It will be interesting to observe the result of this solid paraffin intake instead of the injection, which has some objectionable features. With the injection, the old serrated scar tissue would have remained on the surface of the skin. Dr. Curtis said he thought in a month the new cicatrix would be invisible.

Case Illustrative of the After Effects of the Free Use of the Galvano Cautery. By THOMAS J. HARRIS, M.D.

DR. HARRIS said that he had hoped to present a case illustrating the after effects of too free use of the galvano-cautery, which he thought would prove interesting as so much had been said and written on the subject. This patient, a young man, had come to his clinic with the most pronounced case of intra-nasal deformity he had ever seen, and gave a history of having had a complete obstruction on one side which a doctor said he could cure, and for which he had used the galvano-cautery. The result was a bad sloughing. When Dr. Harris first saw him there was a complete loss of the septum, with great dryness and a big crust in both nostrils. In addition to that, he had gotten up a septic condition, and an acute purulent condition of the mastoid on that side, necessitating operation. Altogether it was one of the most pitiful cases that Dr. Harris had ever met. This was clearly the result of malpractice, and the dangers resulting from the radical use of the galvano-cautery in unsuitable cases could not be too strongly emphasized.

Neoplasm of the Tonsil, Probably Malignant, Treated by the X-Ray with Apparent Benefit. By THOMAS J. HARRIS, M.D.

This patient was a woman, 82 years of age, presented through the courtesy of Dr. Phillips. She gave a history of three years ago having soreness, pain in the throat, and considerable loss of weight. Two years ago she went under treatment, and in addition to local treatment had applications of the X-ray. This proved beneficial and was continued for some time, and then discontinued. The condition returned later, and the X-ray treatment was again resumed. Dr. Phillips was not sure just how many such periods of treatment she had had, but when he saw her three weeks ago, she had been without treatment for some time, and there was on the left tonsil a distinct neoplastic condition, though not so pronounced, Dr. Phillips says, as it was some time ago, when there was ulceration and pain. She is convinced that every time she has received treatment by the X-ray and has been markedly improved. At present there is a marked swelling of the eyelid, and when the lid is turned up, there are a number of swellings over it, which suggests a malignant growth. She has had a large goitre for a number of years. The question was whether or not the disease was malignant, possibly sarcomatous. If so, it was certainly a very unusual circumstance to find such a condition existing for

three years and the patient in such good condition; no extension of the process, no pain, and no bleeding. There was some involvement of the soft palate but it was chiefly limited to the left tonsil. There was also the condition of the eyelid. Since he first saw her a week or ten days before, there had been several applications of the X-ray, and her condition is very much improved. The question of taking a piece of the growth for examination had been considered, but it was thought that on account of the advanced age of the patient and her present good condition it was not advisable to do so.

DISCUSSION.

DR. CHAPPELL said that undoubtedly much destruction sometimes resulted from the use of the cautery, but he would like to know from Dr. Harris if the question of syphilis had been considered.

DR. HARRIS replied that this had been looked into very carefully and it was very conclusively proven that there was no trace of syphilis.

DR. PHILLIPS said in connection with Dr. Harris' second case, that he had seen the patient a year and a half ago for the first time, and had never seen a case which presented a more typical picture of sarcoma of the tonsil. The tonsil was so enormously enlarged that it interfered with respiration. The surface was ulcerated and there was much glandular involvement of the neck. The condition of the patient at that time seemed to him practically hopeless, and he had no idea that she would live very long, and he considered the case inoperable. He had referred the case to the electrical department of the Post-Graduate Hospital and she was thoroughly X-rayed for a long time, and he had been surprised a month or so ago to see her in the clinic again. She was then in very good condition, barring the trouble on her upper eyelid. This seemed to him to be malignant, and he thought it was sarcoma, and could only account for the slowness of the development and the apparent ease of cure or relief from the use of the X-ray on the ground that it was due in a measure to her advanced age, 82 years. At the time she was at the Post-Graduate she absolutely refused to allow the removal of a piece of tissue for examination.

DR. HARRIS said that according to Dr. Phillips' history of the case a year and a half ago, if this were really a case of malignancy it certainly was evidence of the value of the X-ray. In the Manhattan Eye, Ear and Throat Hospital, was one of the most expert

men in this line of work to be found in the city, and he had declared himself to be dissatisfied with the results obtained from such treatment, but another physician whom he knew spoke very optimistically of its value, even in cases of the throat, and certainly this patient had been very much improved both in regard to pain and other conditions by the application of the X-ray.

Case of Laryngeal Edema. Presented for Etiological Diagnosis
by HARMON SMITH, M.D.

The patient, M. B., aged 24, was the oldest of 18 children, 13 of whom are living. Mother died in childbirth. Father still living. Denies any specific trouble and examination of lungs is negative. Six years ago had an attack similar to the present, when difficulty in swallowing and a sensation of swelling in the throat were the chief symptoms. Twelve months after this had another attack, when the choking and difficulty in breathing and swallowing were more intense. The present attack is about the seventh and began about a month ago. She consulted a throat specialist at Bellevue Clinic who gave her some medicine which she took for three weeks without improvement. She was first seen at Dr. Chappell's Clinic at the Manhattan Eye, Ear and Throat Hospital a week ago. She gave a history of difficult breathing and swallowing, but unaccompanied with pain. Examination of nasal chambers revealed polypi in both, with a bluish-red oedematous swelling of the left inferior turbinate. The soft palate and uvula were thickened and oedematous. The lingual adenoids were pale and oedematous, and the epiglottis was markedly oedematous and obscured the laryngeal view. All the structures below the soft palate were extremely pale. Believing that the oedema was probably kept up by the iodides, which the medicine she had been taking was surmised to be, she was instructed to discontinue its use and was given 1 grain of hydrarg. cum creta every three hours. Upon examination 5 days later, some reduction of the oedema was apparent.

DISCUSSION.

DR. HARRIS said that he would like to refer to a case which he and several other members of the Section had seen the previous evening, which in many points was similar to the case presented by Dr. Smith. The patient was a boy 11 years of age who came under Dr. Akderton's care with a bristle in the supra-tonsillar fossa. The bristle was removed and also a section of the uvula for examination by the pathologist, who reported that it had many

characteristics of an endothelioma. Iodide of potassium was given in increasing doses with no benefit, and later Dr. Berens saw the patient and suggested the use of mercury. The boy had most distressing symptoms. The lips were much swollen; the soft palate was brawny and gray, and some oedematous condition existed in the epiglottis. It had seemed to him probable that the earlier existing conditions had been aggravated by the use of the iodides and that it might be a case of iodism, and tonight he had suggested to Dr. Smith the possibility of such a condition in the case presented. It was certainly a very unusual case.

DR. NEWCOMB said that it had occurred to him that the case might be an angio-neurotic oedema. The fact that there had been several attacks during the past few years was in favor of this suspicion, while the fact that it had localized itself in the epiglottis was against it. The typical angio-neurotic oedema is fugitive in its site. Furthermore there is usually a family history, and there is no such history here. It was very difficult to make a positive diagnosis.

DR. SMITH said that he thought there were more points against its being a case of angio-neurotic oedema than in favor of it. As Dr. Newcomb had mentioned, one of the most marked features of angio-neurotic oedema was its sudden disappearance, and in all the histories that he had read the oedema appeared first in one place and then in another.

DR. WATERMAN said that the patient told him that she was never free from the trouble in her throat, and it seemed that the attacks were simply exacerbations of a chronic condition. It did not appear to him to be a true oedema at all.

Laryngeal Edema. By HARMON SMITH, M.D.

Dr. Smith recited the following three cases as bearing upon subsequent remarks:

1. Case of abscess of the tongue, with considerable oedema of the epiglottis and laryngeal parts, which would not yield to any of the recognized methods of treatment, until the abscess, which was obscure, had been located and evacuated.
2. Case of oedema, the underlying cause being chronic nephritis, the definiteness of this diagnosis being proven by autopsy, the larynx being submitted to the Section, showing the existence of the oedema. In this case, tracheotomy had been resorted to without avail. The microscopical examination of the laryngeal

tissues showed them to be infiltrated with serum, the vessels distended with blood, and at points extravasation into the perivascular spaces was noted. No bacteria could be demonstrated in the tissues, or any positive source of infection determined.

3. Case of sudden oedema in a tuberculous larynx, necessitating tracheotomy. The tracheotomy tube remained in situ for 2 months, at which time the tubercular process seemed quiescent and the tube was removed. Since the tracheotomy the patient had gained over 20 pounds, and her disturbance of swallowing and breathing had disappeared. It was definitely known that the condition was tubercular, as both cultures and smears showed tubercle bacilli.

Dr. Smith called attention to the fact that however indefinite the term laryngeal oedema appeared, the fact remained that when one meets with it, none feel too well equipped for its care. The various classifications of different writers of the etiology of the disease had not materially aided in the practical treatment. He then called the attention of the section to classifications made by Seister, in 1852, Von Ziemsen in 1876, Sir Felix Semon in 1895, Jonathan Wright in 1896, and Kuttner in 1896, and Rice in 1898.

Dr. Smith argued that some other solution must be presented to account for the entrance of the bacteria into the laryngeal tissues other than that presented by Sir Felix Semon, i.e., that they gain entrance through some accidental breach of the protecting surface of the larynx. He claimed that their entrance must be due to some change from within as a reduction of the laryngeal resistance, either from a disturbance of the vaso-motor supply or from some constitutional disease. He also claimed that possibly this resistance was lowered by the presence of the invading organisms in too great numbers, just as it has been proven that bovine tubercle bacilli are infectious to man only when their number is so great that collectively they form a power against which the resistance of the alimentary canal cannot contend. He also called the attention to the rarity of this disease, Pettesohn having found only 8 cases in 5161 throat and nose cases treated in two years. Dr. Smith then went on to enumerate the causes in their probable order of frequency: first, infection; second, constitutional diseases; third, traumatism.

The pathology and symptoms were discussed. Under treatment, in addition to the usual methods pursued, he added the local and internal use of adrenalin, and called attention to the favorable use of venesection in these cases. Angio-neurotic oedema was dwelt

upon, and attention called to the 29 cases reported by Osler in an article published in 1904. In closing Dr. Smith said: "Doubt still exists as to the exact cause of acute primary laryngeal oedema, for which reason every effort should be made to obtain definite knowledge concerning it by autopsy and microscopical examination."

DISCUSSION.

Dr. Rice said that the writer of the paper had treated the subject in a very masterly way. The subject seemed particularly difficult because in consulting its literature one was impressed with the great conflict and confusion of ideas, both as to its etiology and the classification of the different forms of the disease. No one man had seen a sufficient number of cases of laryngeal oedema to become a great authority. De Blois, of Boston, had once submitted the history of 14 cases from a total of 4000 patients whom he had treated in both his private and clinical practice, showing how rare such cases are. In 1898, he himself had read a paper containing a tabulated account of 41 cases--all that could be found by an expert who examined the literature from 1887 to 1898. Cases of laryngeal oedema are becoming more and more rare, and he believed that this could be attributed to the fact that the combination of causes producing it occurs less frequently to-day than formerly. He distinctly remembered having had two or three cases at one time at Charity Hospital, Blackwell's Island, but had not seen a case of extreme oedema of the larynx for a number of years. During the past five years he had seen unilateral oedema of the vocal cords, moderate oedema of the arytenoids, and oedema of the epiglottis, but had not seen a case that called for tracheotomy. It is very probable that many cases are not diagnosed. The views of the general practitioner tonight would be a valuable aid to this discussion. He could perhaps tell of cases of Quinsy which choked **to death, and suffocation** accompanying what seemed to be simple follicular tonsilitis. Laryngeal oedema was undoubtedly the cause of death in such cases. Probably every member present had heard of instances where death intervened in such cases, where the immediate cause was oedema of the larynx. The general practitioner therefore should be on guard for such a dangerous complication and should call upon an expert laryngologist when it occurs.

He had been thinking over the subject of a good simple classification for this disorder and it seemed to him that cases might well be divided into "Inflammatory" and "Non-inflammatory," the

term non-inflammatory covering all cases of oedema of the larynx of a passive character due to general constitutional causes, such as hepatic disease, cardiac affections, diseases of the kidneys, etc., in fact wherever there is a general oedema. The inflammatory type should be subdivided into the acute and the chronic. This is a simple classification; "Non-inflammatory" and "Inflammatory, acute and chronic," the term *acute* covering those cases of typical primary oedema of the larynx and those cases which are secondary to and coincident with inflammations about the base of the tongue and growths of all kinds about the middle or lower pharynx; all varieties of tonsillitis, quincy, abscess, and acute ulcerations of all varieties. The term *chronic* should be reserved for inflammatory oedema of the larynx occurring in tuberculosis or syphilis, benign and malignant growths of the larynx, etc., whenever there is a chronic persistent lesion on the larynx accompanied with an oedema. He noticed that the three cases referred to by Dr. Smith represented the types of the disease as described in this classification. First, the non-inflammatory, in the nephritic patient; then the acute inflammatory, occasioned by the acute inflammation of the pharynx; and lastly, the chronic inflammatory, occurring with tuberculosis of the larynx. We know very little about primary oedema of the larynx. He told of a discussion of an epidemic of septic oedematous laryngitis which occurred in St. Louis in which Dr. Glasgow of that city laid emphasis upon the septic condition of the larynx. He thought, as the reader of the paper had said, that nearly all of these cases were preceded or accompanied by pharyngeal inflammation and perhaps by oedema in some neighboring part. Diphtheretic cases should be carefully excluded. Certainly the laryngeal inflammation must be extremely severe to cause primary oedema, and we should also look for the predisposing causes. Given extreme exposure to cold or an extreme amount of violence to the larynx by shouting, drinking, smoking, etc., that alone might not be enough, but we may come upon a history of old syphilis or some old traumatism of the larynx which would furnish the predisposition. He thought that Dr. Smith's paper formed a valuable contribution to the literature on this subject. He then told of a case occurring in his own practice, a man of about 60 years of age with an apparently healthy larynx and no inflammatory condition of the pharynx, with a persistent oedema of the left vocal cord. He finally discovered that the man was accustomed to take iodide of potash occasionally for a suspected syphilis, and this was the only cause he could find for the oedema. We know that iodide

of potash affects some people in a very remarkable way. All cases of laryngeal oedema are distressing and dangerous, and we should be prepared to treat them quickly and skillfully.

DR. J. E. NEWCOMB said that no better clinical account of laryngeal oedema had ever been given than the one appearing in Morell Mackenzie's book, published twenty-five years ago. In regard to chronic oedema, this author had presented some interesting figures. He had found this complication in 165 cases out of 500 examined during life, or 33 per cent; of cases examined post-mortem, it had been present in 71 per cent. In syphilis it was present in 32 out of 179 cases, or 18 per cent. In cancer it was present in practically every case in which a positive diagnosis was made. In these chronic forms the appearance of the mucosa was pale and the condition was one of slow onset. The exudate was either serous or sero-purulent.

The acute form occurred most frequently between the years of 18 and 35. The prognosis as determined from the figures of Sestier, who had been mentioned by the reader of the paper, was always grave. Thus there had been 158 fatalities out of 213 cases, 30 of these having been tracheotomized. In 58 cases recovering, there had been 30 tracheotomies. In the speaker's opinion, the main advance had been in the grouping of the many designations of acute laryngeal oedema of various forms under the designation of "septic sore throat" (Semon). This latter authority had enumerated as among the factors determining the occurrence of oedema, the resistance of the tissues as well as the bacterial factor. The good effects of adrenalin had been manifested in a case recently reported by Dr. French of Brooklyn.

DR. DELAVAN said that the subject was much too broad and deep to be easily disposed of. The proposition that all cases of this type of disease were due to the same cause might possibly, in a very general sense, be true. Clinically, however, there was a great difference between an acute laryngitis accompanied with oedema and a violent phlegmonous pharyngitis or a genuine angina Ludovici. Bacteriologically also, marked differences existed. The dictum of Hippocrates, that "Erysipelas, beginning within the air passages and extending to the surface is generally recovered from, but beginning upon the surface and extending inwards is usually fatal," indicated that from the earliest period of medicine erysipelas was recognized as a possible cause of phlegmonous angina. Several years ago, a severe epidemic of sore throat accompanied with

oedema of the larynx visited Cambridge, Mass., affecting both students and townspeople. Among the Harvard patients alone, one student lost his life and two were so ill as to require tracheotomy. In one of these cases which returned to New York and came under the speaker's care, careful bacteriological examination revealed no bacterium of importance except the *Staphylococcus*, and this, he learned upon inquiry in Boston, had been true of the other patients similarly affected and examined. On the other hand, in the cases generally met with in practice, the *Streptococcus* very frequently seemed to be the determining cause of the infection. It therefore appeared that not only with the clinical aspects but also with the actual sources of infection, a variety of conditions might obtain. Hence the question of the treatment became one of unusual difficulty. Some cases were relatively mild and tended to more or less spontaneous recovery. Some were among the most severe and virulent known in the history of disease, quickly terminating life in spite of the most energetic and intelligent measures for their relief. Death from sudden heart failure, or following depression after tracheotomy, was by no means uncommon. With other unmistakable manifestations, it readily proved that the angina was but the local expression of what had become a profound general toxæmia.

Local treatment which would be likely to relieve the milder cases might be thrown away on the graver ones. More than ten years ago, the speaker had advocated for the relief of oedema of the larynx where scarification was indicated, the use of Cocaine, immediately following the scarification. The object of this was to aid the scarification by causing as much depletion of the oedematous tissues as possible. With the introduction of Suprarenal Extract the objectionable qualities of Cocaine had been eliminated. It was not intended that the applications of the astringent should be continued, but that they should be made for the purpose above described. The use of Suprarenal Extract, however, in continued applications had been found by a number of good observers to give excellent results, not only in the reduction of the swelling, but in the opportunity thereby gained for the more thorough cleansing of the parts. In the more severe cases, such treatment would of course be unreliable. In the experience of the speaker warm inhalations had not proved as beneficial in many of these cases as the use of cold. With regard to tracheotomy, where the obstruction to breathing was above the larynx, this would of course be necessary. Otherwise, in general, intubation was prefer-

able. It was quite possible that in some of the fatal tracheotomies a skillfully performed intubation might have saved life.

Oedema of the larynx from trauma or from drugs hardly seemed to come within the scope of the discussion. The speaker had had an attack of oedema requiring tracheotomy in a case of suspected carcinoma of the larynx, coming on within forty-eight hours after the beginning of the administration of the iodide of potassium and before one drachm of it in all had been taken.

DR. THURBER said, that of the last 5500 cases in the service at Vanderbilt Clinic, there were but two of acute oedema of the larynx. Both patients were men working about the building and had been exposed the day before to cold and damp. One had washed windows without a hat on. The oedema in both cases was in the region of the arytenoids and was not marked, giving rise to some discomfort in swallowing and the sense of a lump in the throat. There were no general symptoms. One recovered under a weak solution of sulphate of zinc in about nine days and the other got well with practically no treatment. It was a little peculiar that the only examples of this affection in that number of cases, should have come in on the same day.

DR. ABRAHAM reported four cases that had come under his observation following acute septic sore throat. The first occurred about five years ago in a man 36 years of age, who consulted him in the morning with a beginning sore throat. He was advised to go home, but being a business man insisted on going to his office. It was a very cold day. That evening Dr. Abraham said he received an urgent call from the patient, and from the symptoms he went prepared to do a tracheotomy. He found a marked oedema of the uvula and of the right and left posterior faucial pillars, and there was a marked oedema of the epiglottis and aryepiglottic folds of the larynx. He cocaineized the laryngeal cavity, punctured and injected into the larynx a 25 per cent aqueous solution of ichthyol and remained with the patient for an hour, giving him a second injection, and was gratified to see a marked decrease of all the symptoms. The next day it was still better, and in about 36 hours the oedema had entirely disappeared. The other cases were on the same order. A peculiar feature was that all of these patients were subject to tonsillitis, and three of them were rheumatic. In all there was a large mass of tonsillar tissue, situated in the supra-tonsillar fossa, and there was a deep depression or pocket in the tonsillar tissue or between it and the posterior faucial fold. On

cureting the pocket a cheesy mass was removed, the presence of which, acting as an irritant, produced the inflammation, the swelling and congestion, and the action of the toxine on the blood vessels produced an exudation of serum into the perivascular tissues, which accounted for the oedema of the uvula and faucial folds and, by extension and gravity, the oedema of the larynx.

He had used ichthyol largely in all his cases of acute septic sore throat with very gratifying results. He generally employed a 25 per cent solution. He also applied ice compresses to the neck, allowed the patient to suck ice. In the last two years he had been and using adrenalin with the ichthyol. About two months ago he had seen a case in the clinic which undoubtedly was malignant. The patient was a man 72 years of age, who came to the clinic complaining that he could hardly breathe. He was advised to go into the hospital and was admitted at Bellevue. He had an intense oedema accompanying a malignant growth. His experience had been limited to these few cases, but he wished to call attention to the use of ichthyol in treating them. In looking over the literature of the subject he observed that Dr. Kyle mentioned the use of this remedy.

DR. ADOLPH RUPP:—Told of a case of acute and severe oedema of the Larynx, where he held himself ready to do tracheotomy, should the man show signs of real choking. In eight days the man was again up and about. In this case no cocaine was used, nor adrenalin, ichthyol, nor any of the remedies that have been mentioned in the paper read by Dr. Smith or mentioned by those who had preceded the speaker. The only remedies used were ice applications externally to the neck and chest and Tr. Ferri chlor. internally. All this occurred more than 25 years ago in the Erysipelas Pavilion of City Hospital, when the new drugs were unknown. Judging by experiments on his own nasal mucous membranes, in health and disease, he could not understand how much lasting benefit could result in so serious a disease as acute laryngeal oedema, from the use of cocaine and adrenalin. In acute coryza the effect of cocaine is hardly more than momentary, and when they are not used under these conditions of mucous membranal oedema, his coryza (in his own nose) recover more quickly when cocaine and adrenalin are not used. Why should a different action be expected in the larynx?

Slight and even moderately severe oedemas of the larynx are seen in the course of Bright's disease and alcoholism, as well as in

pneumonias and pleurisy, which get well of themselves. Oedemas associated with these general diseases often intermit. He had seen this in the chronic as well as the acute forms of these diseases. He had seen a case that day. An immoderate drinker having Bright's disease stated he came near choking during the preceding night. Examination revealed a slight oedema of the false vocal cords. Dr. Rupp believed that such cases were commoner than is usually supposed, and escaped detection because the general practitioner is not in the habit of using the laryngoscope. Last winter he saw an old lady, aged 80, who was suffering from nephritis and a cold, in whom he also discovered a pneumonia in the left lung, who suffered much dyspnoea and aphonia on account of oedema of the epiglottis and arytenoids. She could not be treated; but she was allowed to inhale Hoffmann's anodyne, which gave her relief enough in her estimation. Next day she could talk and breathe easily. But the following day she was seized with dyspnoea, very suddenly, and died before her regular physician could reach her. This case demonstrated the intermittency of the trouble in the course of acute disease.

DR. A. RUPP told of a case of acute oedema of the larynx due to the hasty swallowing of a hot potato. Here the swelling was over the left arytenoid chiefly. Dr. O'Dwyer had seen the case when it was presented at a meeting of the alumni of the City Hospital. This was in 1894. Dr. O'Dwyer thought intubation would yield good results in such cases. This case did well without intubation, and the patient is alive to-day. Applications of nitrate of silver had been resorted to; and Dr. Rupp stated he had always obtained good results with this silver salt. Dr. A. L. Loomis used to recommend this salt for oedema of the larynx; and Professor Greene, one of the predecessors of modern laryngology had also recommended it long before.

DR. DOUGLASS said that it was difficult for him to understand how the much-vaunted treatment of oedema of the larynx by adrenalin chloride could be of the slightest value. It seemed to him one of those methods of treatment which had empirically crept into medicine and had subsequently been adopted by all who were searching for something to help such cases, without much thought of the results produced by the remedy. We know that oedema of the larynx is not a mere congestion of the mucous membrane, but a true exudate of albuminous material into the loose areolar tissue beneath. This exudate fills the inter-spaces, distending them and

thus decreasing the lumen of the larynx. We know also that while congestion accompanies such exudation, it is not a marked feature. It has also been definitely determined that adrenalin produces its effects of diminishing the bulk of the tissue by producing ischaemia of the parts as the result of contraction of the muscle fibres of the blood vessels. It has just as definitely been determined that adrenalin produces no effect by contracting connective tissue nor by diminishing any exudate which has poured into the tissue. It is also an associated observation of the effect of adrenalin that repeated applications of it tend not to keep up this contracting effect but, on the contrary, to produce congestion by dilating the blood vessels whose walls have been paralyzed by too frequent applications of a contracting element. This is not only an experimental fact, but is shown clinically in mucous membrane every day from the intense congestion which follows even one application of adrenalin chloride to the nose; and every rhinologist has observed that adrenalin has no contractile effect on hypertrophic tissue. Now if we combine these facts and apply them to oedema of the larynx it will be seen that instead of adrenalin being a remedy that will do good, it is distinctly contra-indicated; for its entire beneficial effect can only be derived from its contractile effect on blood vessels, which do not form a marked factor in oedema of the larynx, whereas upon the exudate itself it can effect no result, and would indeed tend to decrease the lumen of the larynx by producing reactive congestion from repeated applications of the remedy. It therefore seemed to him that the cases which have been reported as relieved by adrenalin were probably not relieved *because* adrenalin was used, but *in spite of that fact*, and therefore belonged to the class of cases which would have gotten well with the mere application of ice or indeed without any treatment at all.

DR. SMITH, in closing the discussion, said that in reference to Dr. Douglas' remarks regarding the use of adrenalin, he would agree with him if only one or two applications of the adrenalin were made, but he believed if the treatment were continued the adrenalin would hold the oedema under control until nature had time to take care of the extravasated exudate.

THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND
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SECTION ON OTO-LARYNGOLOGY.

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H. W. LOEB, M.D. (St. Louis) President.

Formalin in the Treatment of Diseases of the Ear, Nose and Throat. By OTTO J. STEIN, M.D., Chicago. (*Published in full in THE LARYNGOSCOPE, page 857, Volume XV.*)

DISCUSSION.

DR. FOSTER, Denver: I consider formalin one of the most useful agents we have had given to us in a long time. It certainly has great advantages both in the way it can be handled, being one of the simplest to use, and also in its curative effects. I have used it frequently in purulent discharges from the ear, and there is no better disinfecting agent that I have ever employed. I think its use is very much limited in diseases of the nose unless you use cocaine, and I am greatly opposed to the constant use of cocaine. We run the danger of getting the patient in the cocaine habit. We do not know when we start them on the downward course, because it is a very seductive drug. Formaldehyde in sinusitis can not be used without cocaine preceding it.

I was interested in the remarks about tubercular laryngitis. We have a good deal of that out West. All the patients that can not be cured in your climate you send to Colorado. We get a great many of them. I think of all drugs this one is the best I have ever tried in these cases, but it must be used quite strong. You have to use it strong enough to compel the use of cocaine in the throat before applying it; because there is a great deal of pain in the use of formaldehyde. The physician can use it in the strength of two and a half per cent applied locally to the throat with a spray. But the use of formaldehyde does not stop there. The patient should spray the throat from one to two hours with a one per cent solution during the intervals of office treatments. We get better results in tubercular cases with this kind of treatment than with anything else we have ever tried. I do not think there are the disadvantages

in using it that there are in many other forms of general disinfectants, for instance bi-chloride, which has been its most formidable antagonist.

DR. MURPHY: To get these results do you ever use cocaine?

DR. FOSTER: Yes; where there is a great deal of pain.

DR. STUCKY, Lexington, Ky.: I used formaldehyde very freely some years ago but ceased, first, because of the pain and discomfort accompanying its use, and, second, because of the disagreeable dry sensation that followed its use. I am glad to hear Dr. Stein's method of using it, and I think I shall try it again. I have used it principally in the ear; and the excessive pain, the prolonged discomfort of several hours following it made me cease using it. Dr. Stein mentions preceding the application of five per cent formaldehyde with a few drops of cocaine, ten per cent, dropped into the ear. I have used as high as twenty per cent; but my experience is that a diseased ear does not absorb enough of the local anaesthetic to produce anaesthesia. I shall try again with the weaker solutions. I should like to ask Dr. Stein to enlighten us a little as to these two effects, the excessive dryness with even a half per cent solution on the mucous surface, and the pain following its use when instilled into the ear as strong as five per cent.

DR. HAL FOSTER, Kansas City, Mo.: I rise to endorse Dr. Stein's admirable paper. Many of our patients we can not send away, especially the poorer classes, and it has been my custom to use first ten and sometimes a stronger per cent of cocaine, in tuberculosis of the larynx, and then to apply two, three, four and even five per cent of the formalin solution. I am satisfied from experience in a good many cases that it is the best agent we have. It is far better than the strong lactic acid. Under the cocaine it does not give so much irritation, and it certainly gives the patients comfort and relieves the distressing ulceration in those chronic cases of tuberculosis of the larynx that we see in the last stages. I am satisfied that if used judiciously, it will certainly prove very beneficial in these cases.

DR. BALLENGER: Dr. Stein has given me credit for using formalin in rhinitis when it really came to me from Dr. Conwell of Cincinnati. He used it on me. I had a hyperaesthetic rhinitis, was sneezing considerably, had been for three weeks, and this stopped it immediately. But I want to say to you that the sensation is very painful for about thirty seconds. Then it subsides. On account of the dryness, my nose felt very fine indeed; because, up to that time, it had been very moist and dripping and uncomfortable. I have used

it a number of times with patients in this type or hyperaesthetic rhinitis. I do not use it in the ordinary type of rhinitis or choryza; but in the hyperaesthetic types of rhinitis I almost always have found that it gave immediate relief. In the ordinary type of rhinitis I doubt very much whether its use is judicious.

DR. STEIN (closing): My paper was necessarily short, being really more of a clinical paper. Therefore, I quoted only six cases, illustrating a variety of conditions; but formalin in my hands and the hands of my assistants has been used in several hundred cases. I never kept any record of them because we used it so systematically in the clinic and also in my private work; but in ear work especially I have noticed the greatest benefit. As far as the excessive dryness and the pain to which Dr. Stucky refers, I have never had any cause to regret using the formalin. Pain is often produced, lasting possibly not over two minutes, but I do not believe I have ever had a case in which I have used formalin after the method I mentioned yesterday in my paper, which produced pain lasting over two minutes, excepting possibly one girl with muco-purulent middle ear disease, the case mentioned in my paper. The girl was exceedingly sensitive, and at first I did not apply any cocaine previously; but afterwards I did, which mitigated the pain somewhat, although every time I used it she complained considerably over the two minutes. Ordinarily there is no complaint after a minute or two.

But the results you get from its use are worth the pain. As far as the dryness is concerned, really that is what I have been aiming at. I wanted the dryness in these ear cases. I have never had any cause to complain of that.

DR. STUCKY: You mentioned a form yesterday for local application in tubercular laryngitis.

DR. STEIN: It was Lake's well known formula. I can not recall the proportions exactly. I think it is 50 per cent of lactic acid, 10 per cent of carbolic acid, 10 per cent of formalin, 30 per cent of water. I think I am right. This Lake formula has been somewhat modified, but I think that is the original formula. You will find it in Lake's book.

Cyst of the Thyro-Glossus Duct. By JOHN J. KYLE, M.D., INDIANAPOLIS, IND. (*Published in full in THE LARYNGOSCOPE, page 880, Volume XV.*)

DISCUSSION.

DR. TIMBERMAN, Columbus, O.: The reports of such cases as this are of a great deal of interest. There would be a good many difficulties to me in the diagnosis of such a condition as reported, specially situated in the region described. If I can look into an eye and see a persistent hyaloid artery and know that is about the only thing that can occur there, I feel pretty certain about that persistent embryonic structure. The difficulty in this condition would be to determine that it was a persistent embryonic structure, since it might form from almost anything, especially in the neck, where we have such an amount of lymphatic and glandular tissue. I have much respect for a man who can make that diagnosis.

DR. KATE WYLIE BALDWIN, Philadelphia: I have had two cases, one 15 and the other 25 years old, the latter a colored woman. In the case of the 15-year-old girl it had been enlarged all her life, but in the colored woman it had been noticed only for two years. In both cases, it was dissected out and the wound healed by first intention. There has been no recurrence, one two years, the other one year since operation.

DR. PERCY FRIDENBERG, New York: The diagnosis may be complicated where there are signs of acute inflammation. I am in doubt whether my case was an inflamed cyst or merely the retention of septic matter at the base of the tongue. It was a case of a young adult, coming on suddenly, with intense pain in both ears, great difficulty in swallowing and some pain at the base of the tongue; but the pain in both ears persisted to the last. Hearing was not affected at all; there was swelling of both submaxillary glands. He could hardly open the mouth sufficiently to take food, but after making two fruitless attempts, I succeeded in passing a bistoury into the depths and evacuated a quantity of foul-smelling pus, after which the pain in the ears disappeared within two hours. The pus was intensely foul and the boy nearly vomited every time he brought up a bit of this pus afterwards. The question is whether I had to deal here with such a case as described by the essayist.

DR. KYLE (closing): I want to thank the members for their discussion of my paper. My results were perfectly satisfactory. The operation was performed something like fifteen months ago and the patient has remained well.

Tonsillar Tissue.—Should it be Removed in all Cases? By GEO. W. SPOHN, M.D., Elkhart, Indiana. (*Published in full in THE LARYNGOSCOPE, page 73, Volume XVI.*)

DISCUSSION.

DR. STUCKY, Lexington, Ky.: This subject has been threshed out over and over again; so often that it is almost as much as a man's reputation is worth to say anything about it; so I am glad the pendulum is swinging a little from the one extreme of ultra radical surgery of the nose and the throat to the more conservative. I am convinced that we take out too many tonsils, and sometimes too much of a tonsil. I believe, as the essayist has said, that there is a pathological condition of a part of the tonsil and it is not necessary to remove the whole tonsil. I also believe that the adenoid tissue in the vault of the pharynx is responsible for more of the discomfort than the faucial tonsil, and I question very much the advisability of removing every enlarged tonsil that we meet. I believe that the faucial tonsils are frequently the gateway where the first warning we have of systematic disturbances is seen, and many cases of tonsillitis are not due to a pathological condition in the tonsil itself, but are simply a local manifestation of a systematic condition. The removal of the smallest quantity of adenoid, these flat adenoids, does more good than the removal of the tonsils.

DR. BALLENGER: Perhaps there is a time to do tonsillotomy, but in my opinion it is more often proper to do tonsillectomy. In other words, it is more often proper to take out the whole tonsil than a piece. I do not wish to go on record as saying that it is never proper to do tonsillotomy. I have seen tonsils partially removed so many times which still continued to be the seat of follicular inflammation that I prefer to remove the follicles entirely. In order to do so, it is practically necessary to remove the entire tonsil, as it is only the basement membrane that forms the bottom of the crypts. The specimen I showed you is simply an ordinary dissection of the tonsil itself in which none of the fibrous tissue, to which the tonsil is attached at its base, has been removed. When at the bottom of the tonsil, the lower portion as the patient sits, there is a great deal of dense fibrous tissue, its removal, I think, is perhaps reprehensible practice. In other words, in making a dissection, try to make a clean dissection, just including the investment membrane of the tonsil.

I have never attempted any operation, in all my experience, as difficult for me to master as the dissection of a tonsil. I was so thoroughly convinced that clean dissection was the proper method that I kept at it until I think I have finally mastered the technique so that I can do it ordinarily without the removal of anything but the tonsillar tissue. I do not have the accidents that may occur if a part

of the anterior or posterior pillar is cut away. The ugly scarring of the wound that occurs under such conditions is avoided, and a smooth cicatrix results. The deep fossa that is left immediately after the operation fills in smoothly with granular tissue. There is much less hemorrhage than in the haggling work that I did myself in my early experience. With Kyle's right angle knife, by careful technique, I am able to skim around the edge of the tonsil and back of the tonsil, cutting the fibres down almost to the hilum, and then I introduce the instrument and cut off the base and divide any remaining attachment, making a clean dissection. This tonsil shown was removed in the manner I have described.

DR. KYLE: If I correctly understand the tonsils, they are small embryological structures and should undergo partial atrophy, I think about the twelfth year. After birth they may, from infection, become enlarged and during the process of enlargement may undergo a slow form of inflammation. As long as this continues, they are evidently a pathological body and such circumstances necessitate complete removal. They may, after having reached their complete development, undergo a slow process of atrophy or sclerosis due to fibrous degeneration, and then remain innocuous, as a small fatty tumor, which may become encysted and never give rise to any trouble. But as long as they have any of that kind of degeneration, and as long as they have developed to any size larger than a pea, they are pathological bodies in the true sense of the word and should be removed. I do not believe that a tonsil has any function. If it has the function of destroying micro-organisms, it is simply accidental, and is due to the fact of the phagocytes being in the tonsil.

DR. HOTZ: I wish to call attention to an article published in the *University of Pennsylvania Bulletin* for October last on the physiology of the tonsil. The author had made a very careful and scientific study, and he made a very conservative estimate of the conditions of the character of the work, with several very interesting suggestions. He suggested that the tonsil had two functions, one was the absorption of solids in a finely comminuted state, and of fluids; and the other was as he supposed a lymphogenic function. He likened the tonsils to a certain extent to the solitary follicles in the intestines; and he called attention to the fact that the adenoid tissue, the lymphoid tissue in the pharynx, begins to undergo development, enlargement if you will, as the thymus gland undergoes atrophy; and he believed it had something to do with the taking up of the function of that organ. How much truth there is in this I do not know;

but I think it is very interesting to all who care about the physiology of the tonsil.

DR. PERCY FRIDENBERG, New York: There is very little left to say except that we know very little about the physiology of the tonsil. We are just beginning to learn something of ductless glands, and perhaps in years to come some light will be turned on the tonsil. There is a great difference of opinion as to the role of the tonsil. I do not think we should give the tonsils a bad name in order to operate. They are, after all, something more than lymphatic glands such as the adenoid growths which are more irregularly formed. As to the question of when they should be removed, I think a mistake has been made in relying too much on the appearance. I think the history of the patient and the physiology of the tonsil should be the guide. They should be removed when they have given symptoms of obstruction, interference with the voice and breathing. One other indication is the repetition of the attacks of tonsillitis itself. That is the most urgent indication for removal. I do not think the measurements should have anything to do with the case, and I think there are certain hypertrophic tonsils which should not be removed.

DR. S. G. MINER, Detroit, Mich.: In reference to diseased faucial tonsils the statement that in advocating their removal, we should explain that these tonsils are as apt to undergo tubercular degeneration as enlarged cervical glands, I think is not correct. It is very improper to compare the probabilities of cervical diseased glands becoming tubercular, a very common result, to this probability in diseased tonsils, and to look for the same indications for operative treatment on the ground that they are apt to become tubercular. I do not think it is necessary, as sufficient actual reasons exist for their removal. It is very rare indeed for diseased tonsils, either faucial or lingual, to become tubercular, and very common for the cervical glands to do so.

DR. SPOHN (closing): In reference to the statement made by the last speaker, I did not say the faucial tonsils became tubercular. I never alluded to tuberculosis of the tonsils.

In reference to Dr. Kyle's statement as to atrophy, the faucial tonsils do not atrophy at 12 years. The pharyngeal tonsils atrophy from 12 to 15 and the faucial tonsils from 30 to 45, more frequently from 35 to 40.

In reference to Dr. Ballenger's removal of the tonsil; the specimen tonsil that he here exhibits was not removed *in toto*. That tonsil was removed down to the hilum, but there is a fibrous portion, a

base below that. I can not understand why any one should want to remove that fibrous portion. There is no necessity for its removal. It will never inflame. It is only the lymphoid tissue that will ever become inflamed, and that is all that it is necessary to remove.

Intra-Nasal Pressure a Cause of Diplopia and Headache. By KATE WYLIE BALDWIN, M.D., Philadelphia. (*Published in full in THE LARYNGOSCOPE, page 788, Volume XV.*)

DISCUSSION.

DR. IGLAUER, Cincinnati, Ohio: We are greatly indebted to Dr. Baldwin for calling our attention to this important subject. I think these pains in the head are more in the nature of a neuralgia than a headache, and we, as specialists, are fully aware how frequently they occur. I believe, however, that the general practitioner is not cognizant of this fact and he is prone to treat these cases as headache of an unknown origin, and delays too long in sending them to the specialist. You will notice in this list the number of patients who were physicians. It often takes them a long time to discover what is the matter. It never seems to occur to them that a headache may originate in the nose. In my experience, a headache which arises from an enlarged middle turbinate is usually a frontal headache. I believe Dr. Baldwin noticed it more in the vertex or occiput; but the pain is usually above the eyes. It is important to rule out a simple neuralgia of the trigeminal nerve, and you can usually do that by pressing over the exit of the nerve over the orbit, and over the infra-orbital foramen. The condition in the nose is usually typical. We find the anterior end of the middle turbinal in contact with the septum; and I have often noticed the hyperaesthesia mentioned in the paper. Another sign is that, when you put in the probe between the turbinal and the septum, there is a certain resiliency as if the turbinal were acting as a spring. It will jump back as it were, as soon as you remove the probe. Dryness in the throat was mentioned as a possible sequel to this operation, but it was not considered prone to occur. It seems to me that the removal of the inferior turbinate is what causes a dry throat and not the middle turbinate, because the passages in the attic of the nose are narrow, and therefore even after the turbinate is out there is sufficient surface to moisten the air. These cases are prone to neurasthenia. The patients become very nervous, and there is a vicious circle established. One case of recurrence was reported. I had one case, a physician who had been operated upon several years ago by the late Dr. Thorner. After several years these headaches recurred and the character of the pain

was immediately recognized. I found the middle turbinate had undergone enlargement for a second time. I removed the enlarged portion, and the headaches again subsided. These enlarged turbinates are often cystic. The diplopia has not come under my observation; but I should like to call attention to an article in the last number of the *Journal of the American Medical Association*, by Dr. Posey. He points out that this diplopia may not be manifest, may only occur in the peripheral field of vision and may only be discovered upon careful examination of the eye. He also discusses the etiology of this diplopia. It may, *first*, be mechanical. *Second*, it may be due to a contiguity of the diseased process; that is, the inflammation may extend from the ethmoid cells into the belly of the muscles. In this case rotation of the eyeball will produce pain in the muscle. *Third*, the nerve supplying the muscle may be affected and in that way produce the diplopia.

DR. MURPHY, Cincinnati, Ohio: I have not had any complaints of dryness following this operation. In fact, in most cases there is excessive secretion and the patient is much relieved when this is stopped and some drying up of the nose occurs. In reference to the subject of removing the middle turbinate we all have our different methods. I usually get better results by means of the middle turbinate scissors devised by Dr. Holmes. The saw that was shown I used twelve years ago, invented at that time by Dr. Vail. He has the identical saw, and in many cases it acts very nicely where the parts are so narrow that the scissors can with difficulty be introduced.

DR. STUCKY, Lexington, Ky.: I believe the more we study the middle turbinate the less we will have for the cautery and treatment of the inferior turbinate. I know of no operation that has afforded as much complete relief in my work as removal of a diseased middle turbinate. The discomfort and pain in a majority of instances that I have recorded has been in the back of the head except in acute cases and there we have the frontal headache. I do not believe the pain is due to a diseased turbinate, that is, the turbinate being diseased itself, as much as to the pressure caused by it. The turbinate is simply an off-shoot of the ethmoid, and whenever it touches the lateral wall, or blocks up the middle meatus at all, then we are going to have trouble. We have trouble not only with the ethmoid, but with the frontal. We may have violent and persistent pain as the result of nerve pressure, but I believe it is more frequently the damming up of the natural secretions of the accessory sinuses. I never had any dryness of the throat following its removal. Nothing

gives my patients as much relief as its removal when abnormal. I never have seen anything but good results, and I have practically used but the one method, the scissors and the snare.

DR. BECK, Chicago, Ill.: I rise to endorse Dr. Stucky's remarks, and I supplement them by the fact that the middle turbinate body I find is not diseased. I speak of sections made of the middle turbinate body that I removed for the same purposes, and my diagnosis in many of these cases of headaches, frontal or occipital is sinusitis. I have used the Holmes scissors on the turbinate body, or the saw. It depends on how the nose is built. If it is narrow a saw such as Dr. Baldwin has shown, which I think is better than Vail's, because it is smaller, is more suitable than scissors. The sinuses, according to the works of many who have made post-mortem examinations, show disease, not a purulent sinusitis, but muco-purulent. And therein lies the secret of these headaches and eye symptoms. I have no doubt there may be an affection of the eye muscle or the nerve or any part adjacent to the sinuses, or the middle turbinate body may become affected.

DR. ANDREWS, Chicago, Ill.: I fully agree with Dr. Baldwin and with what has been said in this discussion, but I would also add a symptom which I have frequently heard mentioned, the balloon feeling in the head. I do not know what the balloon sensation is. I have no means of knowing. But three patients, one a physician, have mentioned the sensation within the past month. This sensation was relieved by the removal of intranasal pressure; in some instances the removal of the middle turbinate, in others the removal of ridges or spurs upon the septum.

DR. SPOHN, Elkhart, Ind.: There are some noses, those very narrow noses, with no particularly enlarged turbinates, that have intense headaches. I have seen a number of cases the past six months, where the family physician had prescribed tonics *et cetera* with no results, that were relieved by local treatment of the septum.

The pressure was not so great, but there was an extreme sensitive condition of one side of the nose. My diagnosis was periostitis of the vomer. Repeated applications of cocain and adrenalin solution followed with iodine, gave relief of the headaches.

DR. BALLENGER: I wish to corroborate what Dr. Baldwin has so clearly set forth, the value of removing intranasal pressure. Recently I operated upon a patient for this purpose. He was troubled with headaches and had been unable to get relief by any prescription for glasses, several of which had been given him. He came to me on his own diagnosis of a deflected septum. He said he thought he needed a submucous operation. His septum had a large ridge on

the right side and a deflection toward the middle turbinate on the left. Instead of removing the turbinates, I performed the submucous operation. This was some two months ago, and up to this time he has not had a recurrence of his headaches. I do not want to be understood as advocating a submucous operation instead of a turbinectomy. I cite the case as one illustrating the result of relieving intranasal pressure.

DR. BALDWIN (closing): The first gentleman spoke of the frontal headache as being more severe than the temporal. In many cases a temporal headache is really more severe than the frontal. It removes it a little further from the middle turbinate, as does the occipital headache. In temporal headache the pressure on the outer wall is often more than on the septum. Just here I would like to speak on that point. You will sometimes find the septum side perfectly free and the pressure entirely on the outer wall. I operated on a case of that kind six weeks ago where I declined to operate five years before, and the case had been treated ever since by the general practitioner. There was plenty of room on the septum side; a firm, very large flat turbinate had adapted itself to the outer wall till there was practically no space except just at the base. In that case there was stiffness of the jaw as well as the temporal headache. The stiffness of the jaw disappeared as did the headache. Holmes' scissors, it would have been impossible to use in the majority of the cases I have reported. The space in front being too narrow to permit of seeing when using the scissors. I have used them in other cases. I did not know Dr. Vail had such a saw as this. Mechanical pressure was mentioned. There is something in it. The reflexes are even greater than in other parts of the body. One speaker referred to the reflexes in reference to the bladder. I have had several cases where atrophy or nasal pressure has caused very unpleasant bladder symptoms which were relieved by proper care of the nose. The balloon feeling may be the same as the feeling of bursting. I do not for a minute wish to be understood as believing that middle turbinectomy will remove all headaches. I have declined to operate on many cases referred to me for headaches; and I now think I have declined to operate on some which with my present experience might be relieved. In regard to the septum, I have had many cases with the septal condition Dr. Ballinger spoke of. I did not report them in this paper simply because I wished to confine it to the middle turbinates. As to the use of cocaine you will find a solution of adrenalin will almost always be sufficient for diagnostic purposes, and less dangerous to the patient.

The Treatment of Atrophic Rhinitis by Oro-Naso Canula. By

SAMUEL IGLAUER, M.D., Cincinnati, Ohio. (*Published in full in THE LARYNGOSCOPE, page 833, Volume XL.*)

DISCUSSION.

DR. KYLE, Indianapolis, Ind.: I certainly want to congratulate Dr. Iglauder on his unique operation. I think it one well worthy of our trial. The discrepancy in regard to the etiology and pathology of the disease was mentioned. If we could only understand the pathology of the disease we might advocate some accurate treatment, but unfortunately, up to the present time as I said before, we have no definite knowledge in regard to the pathological condition. To me it always appeared as a trophic neurosis and that the theory of Cordes was nearly correct in that we have an increase of osteoclasts with atrophy of bone, and also that the ozena or foul odor was more especially due to the want of some chemical antitoxine that should be in the system, and if we could find an antitoxin we might at least relieve the odor. We must not forget the fact that many of these cases of atrophic degeneration are complicated with syphilis, particularly those in which we have had a destruction of the hard palate and there is a perforation. Some two or three years ago Dr. Beck showed me a beautiful case of atrophic degeneration of the nasal cavity in which the sinuses were wide open. You could look in through the roof of the mouth which had been destroyed, and there was a complete picture of the whole cavity. You could see the sphenoid, antra and the ethmoid cells and their openings and likewise the openings into the frontal sinuses. This was a beautiful picture. There was a complete destruction of the hard palate, as I told you before, and yet this had gone on. Whether or not the atrophy was preceded by the syphilis or the syphilis had followed the atrophy, which was more probable, there necessarily had been at first an exudation of mucus into the nasal cavity, and yet with all this forcing of the mucus from the mouth into the nasal cavity this atrophic degeneration had continued and, when I saw the case, it was still in process of degeneration. Since that time, Dr. Beck has told me that he was able to bring about complete relief with the paraffin injections. I can understand why the paraffin should be used for temporary relief because of the inflammation brought about by the injection into the sub-cutaneous region. There would be an exudation of leucocytes and mucus, and a building up of the mucous membrane, bringing it back to a functioning condition. Of course there is a time when this must

stop and atrophy must again take place, but if we can only give these patients temporary relief we have at least done them some service.

DR. BALDWIN, Boston, Mass.: I read a paper on this subject before the Laryngological Section of the American Medical Association three years ago, pointing out the desirability of equalizing the air space on the two sides by correcting the deformed septum. It might be an advantage in these cases where there is great deformity to correct the septum first. In addition to syphilis as a predisposing cause of atrophy, heredity goes a great ways. Where atrophic rhinitis has gone through family after family you will find it manifests itself in children only two, three or four years old. In some of these cases you will get no syphilitic history as far back as you can trace them. In others I have inquired and found that the fathers or grandfathers or great grandfathers or grandmothers had syphilis and no manifestation of syphilis in the atrophic case, other than atrophic rhinitis which sometimes was associated with atrophic conditions of the throat and larynx as well. In one case where the nose had been very much involved and the larynx to some extent, years afterwards the eyes became involved and yielded to nothing but very large doses of potassium iodide. That confirmed my opinion that the nasal trouble was a manifestation of inherited syphilis. There was a direct history of syphilis in the immediate family.

DR. STUCKY, Lexington, Ky.: Anything that promises to contribute to the relief of this offensive trouble is always of interest. I do not feel competent to discuss the methods suggested by the essayist, but I am anxious to wait and see the results. There are two things I wish to mention that have given me better results than anything else. It matters not whether I got a history of syphilis or not. It matters not whether I suspect syphilis or not, the constitutional treatment which is always indicated, I believe, and has given me the best results, is to push the iodide until you get an increased discharge of mucous from the nose, then to give a sufficiently large dose to keep the patient well under the influence for several months. So much for the constitutional treatment. Now, the local treatment. Instead of using the douches *ad infinitum* and eternally, there has nothing given my patients so much relief as crude petroleum, or coal oil. They may object to it a little bit at first, using it as a spray, but after a couple of days the relief is so marked that they no longer object to it. I would be very glad to hear a report in a year hence from the use of these two remedies

for two or three months at least. Iodide of potassium internally and crude petroleum oil sprayed two or three times a day.

DR. GOLDSTEIN, St. Louis, Mo.: As I understand the main principles developed in this paper and the canula by which Dr. Iglauer establishes an artificial oro-nasal passage, it is to introduce the salivary secretion and get its beneficial effect on the atrophic mucosa. If that were sufficient to regenerate the mucosa or to bring about a satisfactory condition in these atrophic areas, no matter what their etiology or pathology might be, an analogous condition ought to exist in atrophic states as we find them in the pharynx and larynx. Here no artificial measures are necessary to establish free lubrication of the pharyngeal and laryngeal surfaces; and still those of us who have had occasional cases of localized pharyngeal and laryngeal atrophy are impressed with the fact that the treatment of these conditions is almost as unyielding as those of the nasal mucosa. If the lubrication by the salivary secretions is the main feature developed in this paper, I fail to see the practical value of this artificial sinus, for it has not been established as a definite measure for improvement or cure in similar conditions in the pharynx and larynx where no such artificial agencies are brought to bear on the case.

DR. BALLENGER: I do not feel competent to discuss the merits of this new method of treatment, but I do not anticipate that it will prove to be entirely satisfactory, although I do believe that it may be of benefit in some cases. The point I wish to raise is the one raised in the paper, namely, the position that Gruenwald takes, that all cases of atrophic rhinitis are due either to a sinusitis or to a focalized suppuration somewhere in the nasal cavities. I recently reviewed his book for my own purposes, not for publication, and just at that time I had what appeared to me to be a well marked case of atrophic rhinitis, with the most horrible ozæna that I have ever encountered, in a lad about seventeen years of age. He lived below the stock yard and was unable to detect any odor in passing. Before coming to me, he had been in the hands of one of our most eminent rhinologists for two years, who had treated him for atrophic rhinitis by washing and the removal of crusts. He came to me and I made the same diagnosis, atrophic rhinitis. On reading Gruenwald again, I determined, since the case was desperate, to give Gruenwald's theories a chance and open up the ethmoidal and sphenoidal cells, which I was sure were involved in the process, if it were a sinusitis. I therefore performed an intra-nasal operation, removing the middle turbinated body upon his right side, then curretting the ethmoidal

cells as thoroughly as I could do it, breaking down the anterior wall of the sphenoidal sinus with the curette. To my surprise, the odor disappeared in one or two days. The discharge ceased inside of a week. The crust formation and ozæna disappeared in a week's time on that side. I was emboldened by this success to attack the other side by the same method, which I did very thoroughly. This side yielded just as quickly. In one week's time from the last operation he was dismissed. It is now some six or eight months, and I heard from him a very short time ago, and he still had perfect relief from the crust formations and from the ozæna. I do not want to be understood as advocating Gruenwald's theory as to the origin of atrophic rhinitis. I simply recite this case as one that was diagnosed by an eminent confrere of mine as atrophic rhinitis, and that yielded to the treatment for sinusitis.

DR. DEVILBISS, Toledo, Ohio: I have been trying to recollect the name of the physician in Texas who has been in the habit of using a solution of pepsin for atrophic rhinitis for the purpose of softening the crusts for removal.

I think Dr. Iglauer's salivary secretion would act in about the same manner as the solution of pepsin. This doctor says he has less trouble with the cases in which he uses a solution of pepsin as a cleanser than with anything he has ever tried. I have not tried it. He said he had used it for many years and with marked benefit. I believe that the atrophic process whether in the spinal cord or the ear, is similar and continuous, whether it be of traumatic origin or of an origin we know nothing about.

DR. BECK, Chicago, Ill.: This is an admirable work of the author, Dr. Iglauer, and it opens a great field for discussion, possibly a greater field than we are able to do justice. I can imagine what a physiologist or a man like Dr. Kyle of Philadelphia would say concerning the function of the salivary secretion and the forcing of the necessary saliva up instead of down. He would be considering what the effect of forcing it into a foreign region will be on the gastric secretion. However, that is to be seen. The conditions which will be brought about certainly gives us a great field for investigation. It is an unnatural fistula, and I am opposed to it because all modern operators on the sinuses object to the opening of a sinus into the mouth. I shall want to hear what the rest of the fellows will say about this cure of atrophic rhinitis, before making this opening. It is a heterogeneous process, although it may work. Concerning the case Dr. Kyle of Indianapolis spoke

of, it was an ordinary case of gumma with a destruction of the floor of the nose, the roof of the mouth; and I simply show it occasionally to show how nicely the sinuses may be studied from it. I did not inform him that I cured the case by paraffin injection. As to these openings, if there is any affection of the voice the smallest opening will give a nasal twang. These openings will close unless they are quite large. Any of you who have had patients with tubes, in the treatment of the antrum of Hymore know they are not pleasant. I was in hopes Dr. Freudenthal would be here this morning to speak of the various radio-therapeutic agents. If there is anything that will prove a valuable therapeutic agent in these cases of atrophic rhinitis it will be something in that line.

An operation such as Dr. Iglauer has described for atrophic rhinitis was done by Dr. Graham (dentist), of Chicago, for the cure of antrum disease. He made the opening from the mouth through the hard palate into the antrum and introduced a button to keep it open.

DR. IGLAUER (closing): I am delighted with the discussion, especially with its scope and extent. I think some of the gentlemen failed to discuss the essential feature, whether the theory of my method will hold. Regarding the deviation of the septum of course caution must be used. This canula should not be introduced into a very narrow nasal fossa. You must look and see if there is room for the canula before you operate. No doubt an unequal division of the incoming air between a narrow and a wide nostril would modify the course of the disease. However, I do not believe that, in most cases of this disease, we complain of too narrow a nostril but rather of one too wide. In regard to syphilis, in Case II. I had a good deal of doubt whether the patient had syphilis or not, as he had a large perforation of the septum; but he had some other symptoms of atrophic rhinitis which I was trying to relieve. Although I put him on anti-syphilitic remedies, I still persisted in this method, and by the combined treatment this patient has been much improved. I agree with Dr. Stucky that we must wait for results. All I claim is that I am encouraged. Results have not been at all unsatisfactory. This method in a measure supplants the douche. Patients gradually come to rely upon the saliva and they seem to get a great deal of satisfaction in keeping the nose clean in that way. The mere presence of moisture will prevent the beginning formation of crusts. I believe, too, that these crusts are not entirely formed from the nasal secretions, but they are partly made up of soot and dust, and if the nose is kept moist, the formation of this sticky paste is prevented.

Dr. Goldstein brought up the question as to whether the saliva would have the desired therapeutic effect and cited as an example that the pharynx and larynx were normally bathed in saliva and still became diseased. I am not aware that saliva enters the larynx. I thought it went over the larynx like any other fluid. As regards the pharynx, pharyngitis is usually a complication of the atrophic process and is secondary to the nasal atrophy. In these cases you will always find more dryness on the posterior walls of the pharynx than on the lateral walls. The posterior wall, I think, receives less saliva than the lateral wall. Further, the disease is usually in the naso-pharynx and gradually extends down into the moist oropharynx. As to the larynx, since no saliva enters the larynx that argument falls away. I further made the point that this disease does not enter the mouth. And why? Either because of the saliva, or because of the structure of the oral mucous membrane. One gentleman brought up the subject of pepsin. I did not mention it in the paper but there might be some digestive action of the saliva upon these crusts. There is not much starch in the nose, aside perhaps from vegetable matter that is inhaled as dust. That perhaps would undergo a change into sugar, and some day I may try to work that out and see if I can find any sugar in the nasal secretions. Dr. Kyle makes the statement that the nasal secretions are identical with those of the mouth. He speaks of three ferments in the saliva. If these were present in sufficient strength, we should have an additional digestive action going on, and might be able to digest these crusts as they form. I am inclined to agree with the trophic theory and it seems to me that atrophic disease is a nutritional disease. As to the involvement of the sinuses, I should certainly rule out sinus disease before attempting any radical procedure.

Ethyl Chloride as a General Anæsthetic. By S. H. LARGE, M.D.
and E. D. BROWN, M.D., Cleveland, Ohio. (*Published in full*
in THE LARYNGOSCOPE, page 883, Volume XV.)

DISCUSSION.

DR. HAWLEY, Chicago, Ill.: As early as 1848, Heyfelder used Ethyl Chloride as a general anæsthetic, and in 1886, the British Medical Association, after experimenting with the drug, condemned its use as being too dangerous, producing convulsions and arresting respiration. About 1895-6 it was again brought to the front by Carlson and Thursing, and was soon used extensively in dental work.

Seitz of Konstanz in 1892, reported sixteen thousand cases, with but one death, and that in a very unfavorable subject. With the exception of Nitrous-Oxide gas, he considers it the safest of all anesthetics. Opisthotonos was observed in three cases; all three, however, were addicted to the use of alcohol.

Burnett in the Medical Press of 1902, considered Ethyl Chloride an ideal anesthetic. He used it in a concentrated form, and found it caused more relaxation than Bromide of Ethyl, though not as much as chloroform.

McLennan in the Glasgow Medical Journal, 1902, places it on a par with laughing gas for safety. The stage of anesthesia is longer than in Ethyl Bromide. H. Gerard published an elaborate study on the subject, but the report of his cases hardly justifies his conclusion. In seventy-eight cases, there were four failures to come under its influence. In nineteen, the pre-anesthetic period ran from five to thirty-eight minutes. In the majority of cases, the anesthetic period was not continued more than ten minutes. The pupils dilated in eighty-five per cent, corneal reflex was absent in forty-nine, excitation was noticed in sixty-seven per cent and at times was quite violent. In fourteen cases there was arrest of respiration, lasting fifteen seconds, vomiting in thirty-nine per cent, sweating in twenty-six per cent and increased rapidity of the pulse, running up to one hundred and sixty per minute. Albumen is generally present in the urine, sometimes found twenty-four hours after its use.

Golden in the New York Medical Journal, classes Chloride of Ethyl with internal poisons, and says it must be used with greatest care, and only in brief operations. Due to this fact, it cannot be compared with either Ether or Chloroform in prolonged operations. However, in short operations, he considers it safer than Chloroform, but not as safe as the Bromide. Both should be used with the patient in a recumbent position, and with a free accompaniment of air. T. O. Allen, in the American Journal of Medical Science, 1903, reports one death, but does not state the number of cases upon which it was used. The case was a colored man, twenty-eight years of age, epileptic, who was to be operated upon for inguinal hernia at the Pennsylvania Hospital. Anesthesia was started with Ethyl Chloride and was used until near narcosis when Ether was substituted. At that moment the patient gagged, and vomited enormous quantities of a clear watery liquid, which seemed to flow from his mouth without any apparent retching. Both respiration and heart action ceased, and all efforts to restore them were fruitless. This death, in my opinion, however, cannot justly be laid to the use of Ethyl Chloride.

In twenty-four cases of minor operations reported by McCardie, the longest case lasting sixteen minutes, no unpleasant effect was produced by the use of Ethyl Chloride, excepting in one case, where the patient died an hour afterwards from heart disease, the autopsy showing fatty degeneration. About ten c. c. of this drug was used in each case. The whole number of cases collected by McCardie was sixteen thousand, with but one death, and twelve thousand four hundred and thirty-six are reported by M. W. Ware, with but one death. Such men as Pfester, Erdman and Craig place Ethyl Chloride above either Chloroform or Ether as to safety in its use, and consider it only surpassed by Nitrous Oxide Gas. Even here it gives a longer narcosis, is less unpleasant to take, induces narcosis more quickly, and (which sometimes is quite an item) is cheaper. The greatest objection offered is the rapidity with which the patient frequently passes out from under it. Like gas, the anesthesia, caused by Ethyl Chloride can be continued by means of Chloroform or Ether. Ethyl Chloride should not be crowded, for if the vapor is too concentrated it may produce asphyxia. Vomiting which sometimes occurs is not so marked as with Chloroform or Ether. Lotheisson, after carefully considering all the reported cases of death from Ethyl Chloride, claims that statistics show it stands next to Chloroform as to mortality; the latter giving one death to every two thousand and seventy-five, while Ethyl Chloride presents one death to every two thousand five hundred and fifty.

In June of the present year, Chaldecott, before The Society for the Study of Diseases in Children, after speaking of the many advantages possessed by Ethyl Chloride ended by saying "it is very clearly laid down that the agent in question is a very powerful anesthetic and should, except under circumstances of extreme urgency only be administered to patients who have been properly prepared." When we consider the various and diametrically different opinions herein given, regarding the safety and non-safety of Ethyl Chloride as a general anesthetic, we are forced, I believe, to the conclusion, that other elements, independent of the anesthetic itself must have been present in many of these cases to produce death. It is not always easy to assure one's self that death is due solely to the anesthetic given, whatever that anesthetic may be. It is difficult to eliminate the many elements which may be present at the time, any one of which may be the cause of death instead of that particular anesthetic used. Improper use and impurity of the drug, surgical shock, or some idiosyncrasy on the part of the patient himself, are few of the causes of death independent of the character of the anesthetic

selected. It is impossible, judging simply from the statistics herein given, to state positively which of the two anesthetics now generally used in short operations about the ear, nose and throat, namely Bromide and Chloride of Ethyl, is the safer, each possessing distinct advantages. Although the patient may yield to the influence of the Bromide more quickly than the Chloride, and while a sudden awakening from an apparent complete narcosis may occur under the use of the Chloride; we must still consider the ease with which the patient passes through the various stages of unconsciousness, when acted upon by the Chloride, the length of time it can be used (56 minutes being recorded) and the preponderance of evidence as to its safety, "before we hesitate to consider Ethyl Chloride *par excellence* as an anesthetic" in all short operations on the ear, nose and throat.

After more or less constant use of Ethyl Chloride, for over seven years, both in clinical and private practice, I have still to see the first case in which its use has caused me the slightest fear or uneasiness. This I cannot say of the Bromide, where but recently a death occurred in this city during its use. I do not hesitate, therefore, to say that when used with care and understanding and in proper and selected cases, I prefer it in short operations to all other anesthetics now in use, except perhaps Nitrous Oxide Gas. As in all anesthetics, certain precautions must always be taken in administering Ethyl Chloride. *First*, the patient should be prepared as for Chloroform or Ether; *second*, whatever mask is used must fit the face snugly; *third*, the anesthetic must be well supplied with air and as little given as possible, care being taken not to present it at first in too large a quantity. Frequently a dram is quite sufficient for short operations. It is advisable to insert between the teeth a prop or gag before beginning to administer the anesthetic. Also the patient should rest for a while after its administration, as faintness sometimes supervene. A mask should be used which does not receive the drug close to the patient's face. For this reason, I much prefer the Apperson Inhaler to any other now in use. Many preparations of Ethyl Chloride now upon the market are impure and unreliable. An examination of fifty specimens showed thirty unfit for use, due to impurity of the drug. In all short operations, while administering the anesthetic, I generally have the patient hold one arm up. When it falls, I wait a short time before removing the mask, to assure myself that the patient is sufficiently under the influence of the anesthetic to operate. If the patient becomes materially excited or cyanotic the mask should be removed at once.

One is generally governed in the selection of an anesthetic by his own experience in its use. If he is so unfortunate as to witness the death of an individual, while under the influence of an anesthetic, that anesthetic will ever afterward be shunned, or used with fear and trembling, in spite of the fact that death may have been due to causes acting independently of the drug. Conclusions are formed and statistics given which are often misleading from this very fact. All conclusions and statistics therefore should be taken *cum grano saltis* if we wish to come to any correct and positive understanding of this subject. A careful study of all deaths occurring while under the influence of anesthetics must be made and a scientific knowledge of their physiological action upon the lower animals as well as upon man, must be obtained by experimental research, conducted along lines similar to those presented in the interesting paper of Drs. Large and Brown, before we can positively answer the question: Is Ethyl Chloride the safest anesthetic to be used in minor operations about the ear, nose and throat?

DR. MURPHY, Cincinnati, Ohio: I have been using Ethyl Chloride in minor operations. I find that it is an ideal anesthetic in those cases where we can operate, say, within a minute and a half to two minutes. The rather pleasant sensation in taking the anæsthetic is one of its great advantages. Patients do not struggle, and usually in half a minute, sometimes less, the patient is anæsthetized sufficiently for doing ordinary operations such as tonsillotomy.

I do not wait until the reflexes are abolished, but find by having the patient snap the finger that the moment they cease snapping there is enough anæsthetic to remove the tonsils. In one of my aural cases we found the mask was not working well. The patient had only taken a few inhalations when I noticed she was getting too much ethyl chloride. It seemed to be running through the mask. I spoke to the assistant and said the mask was not properly adjusted. The patient heard me say it as I removed the mask. The time from the beginning till the end of the complete removal of both tonsils was one minute. The young woman said she had had a pleasant dream, and did not feel the least pain in the operation.

I have had no unpleasant experiences with the anæsthetic whatever, although we realize there is no anæsthetic absolutely devoid of danger.

DR. GOLDSTEIN, St. Louis, Mo.: Since Wingrave's admirable monograph on adenoids was published, presenting a rather complete discussion of the field as it stands today, I have used Ethyl Chloride, not pure but in the combination recommended by the British Laryn-

gologist, with Nitrous Oxide and Bromide of Ethyl, and as such it is an excellent anæsthetic. In most of my cases where the tonsils or adenoids are concerned, the patient is placed in an erect position; and the great value of this form of anæsthetic is that the patient is anæsthetized quickly, that the effects of the anæsthetic wear off almost immediately after the operation, and the patient is able to expectorate, gargle, etc.; and there are no after-effects. These are the important, practical features which recommend themselves to us in this work.

It is an æsthetic way of performing minor operations, and as such I think it ought to command our attention. I even went so far some two years ago as to do a radical mastoid with this anæsthesia, and there were no evil effects. I cite this to show to what extent an anæsthetic of this character might be used, not to recommend it for protracted anæsthesia.

DR. BECK, Chicago, Ill.: Mr. President, I just wish to add a word to the remarks made by Dr. Goldstein in connection with this paper. I was present at an operation where this combination was used, and I operated on tonsils and adenoids and the surgeon did an operation on the saphenous vein. He said: "He is sleeping so nicely, go ahead with the stuff." And the anæsthetist was told to go on, and the operation was completed. The after-effect from this combination in this particular case, in which the patient was thoroughly prepared for the operation, was a very disagreeable one. For a week or ten days they had to take measures to stop the nausea. The dentist said he had given it for a long protracted case of extraction of the teeth and work on the mouth, and it never had any such effect. Possibly it was purely a coincidence, but in protracted cases it is not to be encouraged. I have used in the Illinois Eye and Ear Infirmary the Ethyl Chloride in cases and I like the anæsthetic very well. Since then, somniform has been introduced, and I have used it. It is to be recommended.

DR. IGLAUER, Cincinnati, Ohio: I have had some experience with this anæsthetic, and on the score of safety, I believe it ranks with ether. From the study of statistics as to mortality it appears to be about the same as ether. Of course, Ethyl Chloride has not been in use as long as ether, so these figures are purely tentative. In the use of this anæsthetic in nose and throat work, there is one point I should like to make, and that is you do not have complete relaxation. Dr. Brown says in the paper that it is best not to abolish all the reflexes. Owing to the brief period of anæsthesia one must operate quickly. The other day I had difficulty in getting a child's

mouth open in order to get at the adenoids. I should therefore suggest that you insert the gag before you begin with the anæsthetic, which, however, will often frighten the child, or that you give more of the anæsthetic after the gag has been put in place. The advantage of this anæsthetic is its great rapidity, the pleasant odor and the fact that it is easily porable. While I believe gas to be much safer than Ethyl Chloride, still we always have to have a heavier apparatus.

DR. BROWN (closing): Dr. Murphy, in his remarks, speaks of the anæsthetic as being easy to take. That is one of the very nice features about it. I have taken it myself just for the novelty of it. You can sit in a chair and take it, and you do not entirely lose consciousness; that is, a number of the patients do not. They are apparently aware of what is taking place but they feel no pain. He spoke about having the patient snap his finger. That would be a very good indication for the purpose of making it appear how deeply the patient was under the influence of the anæsthetic. You can not go altogether by the reflexes. I would not advise placing the patient so deeply under as to abolish all the reflexes.

Dr. Goldstein spoke of the recovery, and stated that there were no bad after-effects. Dr. Lange found only two cases of his two hundred where there was any nausea following. I have seen it used a number of times on patients. Used on animals, I know they take it very nicely. I have put them under its influence a great many times. They recover from it in about a minute, and have no bad after-effect. Dr. Beck spoke of the case where he had some trouble from the somniform where they kept the patient under some time, because he took it so nicely. I believe the use of Ethyl Chloride is limited to putting them under, and then stopping there, because the medullary centers very soon become paralyzed. But it is not dangerous to use it simply to that extent.

Dr. Iglauer spoke of its comparative safety. In safety I think it is said to rank next to Nitrous Oxide.

About the relaxation, I do not know hardly how you will overcome that difficulty in working about the mouth, because that is one of the things I have noticed particularly, that the jaws are not relaxed in some cases. Probably it can be got around by putting the gag in the mouth before the Ethyl Chloride is administered. I do not think this trouble is a common one, and you will meet but few cases where the jaws cannot be opened.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting, February 13, 1906.

OTTO T. FREER, M.D., *President.*

Does Denker's Radical Operation of the Antrum of Highmore Represent a Progress in the Surgery of the Sinus? By HERMAN STOLTE, M.D., Milwaukee, Wis. (*Published in full in this issue of THE LARYNGOSCOPE, page 190.*)

DISCUSSION.

DR. W. E. CASSELBERRY:—I should like to ask a few questions. First, with reference to the preliminary operation on the inferior turbinate body. Would it not be possible to make the resection of the turbinate under the same anesthesia immediately preceding the major operation? It is always more or less embarrassing to need to do two operations instead of one. I, myself, have not seen the way clear to make the two in one, hence the inquiry.

Second, can we with reasonable certainty always rely on total freedom from facial deformity, equal to the patient shown by Dr. Stolte? I should fear from the removal of this bony junction of the walls of the antrum, nose and face, some depression at the wing of the nose.

I am favorably impressed with Dr. Stolte's description of Denker's operation. It is certain that we very much desire a more satisfactory operation for chronic empyema of the antrum than we have previously possessed. The Luc operation, carried out exactly as Luc described it, and in its various modifications, is uncertain with respect to possible recurrence of the disease. The operation which has given me the best results is the old open operation made known to me by Dr. Gilmer, but which I supplement by a large antro-nasal opening, which is then practically the same that Dr. Coakley described recently. There is one modification of this operation which has given me satisfaction, that is, instead of making the large antro-nasal opening into the inferior nasal meatus, to make it through the thin part of the wall in the middle meatus, but very large. It is then more apt to stay open than an aperture in the inferior meatus. When it is necessary only to supplement the radical operation and curettage of the antrum, I do not believe that it makes

much difference in the amount of drainage, whether the enlarged opening into the nose be at the very bottom of the cavity or not, as long as it is freely large and permanent.

DR. F. G. STUBBS—It seems to me, from Dr. Stolte's paper, that we must have our own ideas as to the healing of these cases. I do not believe that they will be as rapid as in his case just reported, for it had had a previous operation and so there was not such a large denuded lining to be reformed. In Denker's paper, the three cases reported, had only been operated upon at that time one month, and he states that there was still a mucous secretion present. It does not seem possible that such a large raw surface as is generally made in this operation could be entirely healed in less than three weeks, at least.

In a recent case of mine, operated upon by the modified Luc-Caldwell method, and in which the anterior ethmoidal cells were removed, the patient left the city in ten days with the buccal wound entirely healed. The antrum was irrigated for four months and on discontinuing the washing there was only present a crust each day of the size of the little finger nail but no discharge. On examining the patient after nearly a year from time of operating, I find only a moisture around the frontal duct. So that the probabilities are that the antrum was well in three months at least. I believe that that time will probably approach the actual time required in most cases operated on by the Luc-Caldwell method. Undoubtedly this time will be much shortened by Denker's method, for one can see every part of the antrum and so hasten healing by appropriate measures.

I would say in defence of the Luc-Caldwell operation, after a study of the same on fifteen or twenty cadavers, that it is possible to thoroughly inspect with the eye all parts of the antrum, provided sufficient of the anterior wall be removed, and so one can curette all diseased tissue. Further, if the nasal wall be removed well forward toward the *Apertura Piriformis*, one can see part of the interior from the anterior opening of the nose and the balance with the aid of a small mirror introduced into the naris. Nor will the nasal opening close or narrow by granulation tissue if we preserve the mucous lining of the inferior meatus and use it as a flap to lay down on the floor of the antrum after the bony wall has been thoroughly removed. As the floor of the antrum and of the nose are in most cases on a level, there will be no ridge left for secretions to accumulate behind and the ordinary blowing of the nose will free the antrum as well as the nose.

Boeninghaus, and later, Behrens of New York, have advocated making a larger flap by dissecting out the bone of the lower turbinate and utilizing the tissue of that body for making a larger flap. While I have done this a few times on the cadaver, I imagine that in the live subject, in the presence of free hemorrhage, it would be rather difficult to carry out this procedure. But I do not regard this as of much advantage, as it is rare that all the lining of the antrum has to be sacrificed, for generally we find the diseased areas isolated or not the whole thickness of the membrane involved. If the floor is covered, the essential need is met and the nasal opening can not contract.

I have done the operation of Denker on the cadaver but once, but I find it both simplifies and shortens the time of handling the inner wall of the antrum. It only requires a minute or two to elevate the mucous membrane of the inferior meatus and part of the floor of the nose. The chisel can then be rapidly driven back from the lower corner of the Apertura along the floor of the nose through the wall of the antrum, without fear of lacerating the membrane. It can again be started from the front and cut out a narrow piece of the lower corner of the Apertura, and then a pair of scissors will easily remove as much as desired of the wall, including the lower turbinate if desired. Denker recommends the removal of the anterior third of the turbinate three or four days previously. The flap of mucous membrane can then be properly placed more easily.

In addition to ease of operating the attack on the ethmoids can be more directly done.

In case of after-treatment this method allows perfect access to all parts of the antrum and hence assures a proper and direct treatment of any hindrance to rapid healing.

The objection Dr. Casselberry made that a depressed point might later result at the corner of the nose cannot be decided by observing the patient so soon after the operation. While I am inclined to believe that it will not occur, yet personally, I would prefer not to have this feature of the operation done on myself until I had seen cases several years after and was sure it had not occurred. Kirschman has suggested leaving a bony edge at the Apertura Pyriformis to do away with the possibility of the scar drawing in at this angle of the nose, and it does not obstruct the view of the antrum much more.

Taken altogether, I believe that Denker's operation is an advance on the present Luc-Caldwell operation and its modifications.

DR. LOUIS OSTROM, Rock Island, Ill.:—My experience is limited to twenty-five or thirty operations on the living, and about two hundred on the dead. In two operations, I resected the anterior one-half or two-thirds of the inferior turbinate; then bringing in the technique of the sub-mucous operation, I made a flap of the mucous membrane of the outer wall of the meatus. From the attachment of the inferior turbinate, I brought the anterior incision down to the floor, along the anterior margin of the Apertura Pyriformis, and then half way across the nasal floor. The posterior incision was made downwards and forwards, across the floor of the nose, and made quite a flap, which was loosened completely. Then the ordinary Luc-Caldwell operation through the antrum was used.

Dr. Stolte said that the anterior corner is the troublesome region; that it is practically inaccessible by all operations. It is for this reason that I mention the two operations. I had a gouge made on the plan of an auger, bent so that the center could be grasped firmly, bringing the opposite end down on a line with the edge of the gouge on the dental principle of transmission in a straight line. This gouge permits of chiseling at an angle of 45 degrees more or less as desired, to the face, inside the Luc-Caldwell opening, into the antrum. With this gouge the anterior corner can be absolutely obliterated, and the anterior wall of the antrum made perfectly smooth, leaving as much of the margin of the Apertura Pyriformis as desired. You can then also curette the Ethmoidal and Sphenoidal cells. Take the flap, and by making mattress sutures, you can suture through the superior gingival membrane. Then you have mucous membrane lining the anterior wall of the antrum.

The Denker operation is too radical, except in the very severe cases, where the bone is necrosed, but in such, it certainly is a marked advance in our technique. I believe in leaving all the bone I can, at least saving the Apertura Pyriformis.

While in Boston, I saw them doing a number of exploratory operations on the Frontal Sinus; then filling in the Sinus with paraffin. The granulations are allowed to force the paraffin out gradually. It is claimed that this does not leave a scar.

DR. O. T. FREER:—I wish to again advocate the operation I described in this society last year and which was referred to by Dr. Stolte in his paper; the removal of a large part of the nasal wall of the antrum intranasally from the lower meatus after re-

section of the anterior $\frac{1}{2}$ or $\frac{2}{3}$ of the inferior turbinated body. While the method of making an opening in the middle meatus spoken of by Dr. Casselberry is a good one for comparatively recent cases of empyema of the maxillary antrum where a few irrigations will end the matter, it does not offer good drainage for such cases as have become at all inveterate, for the reason that during the greater part of the day the patient is upright and the discharge must therefore collect in the antrum until it reaches the level of the opening and only while he lies down and upon the side of his body opposite to the affected antrum can there be anything like drainage from an opening in the middle meatus. In contrast to this, the operation I have described, performed with the trephine and bur driven by the dental motor (Laryngoscope, May 1905, page 343; Chicago Medical Recorder, July 1905; Illinois Medical Journal, June 1905, page 557), makes a large opening in the nasal wall of the antrum down to the level of the nasal floor, an opening large enough if need be for curettage, one which permits inspection and which does not in my experience have the tendency to close that Dr. Casselberry refers to. The ablation of so large a portion of the nasal wall not only drains but freely ventilates the antrum, the latter result having an important effect in restoring the pathologically altered mucosa to a normal condition. Zuckerkandl and Zarniko explain the evil effects of the absence of ventilation upon the suppurating mucous membrane of the antrum in the many cases where the natural opening is closed to the ingress of air by such states as swelling of its lining, polypi, enlargement of the middle turbinate or hyperplastic filling of the hiatus semilunaris, and they show that the result of such closure of the outlet of the antrum is absorption of the air contained in its cavity and the consequent placing of its mucosa under suction, that is, negative pressure such as occurs in the tympanic cavity when ab-mucosa, just as a cupping glass causes the same condition in the Eustachian tube. The result of this rarefaction of the air in the cavity of the antrum is venous congestion and edema of the mucosa, just as a cupping glass causes the same condition in the skin. Free ventilation of the cavity of the antrum does away with this abnormal partial vacuum, so that edematous and apparently badly degenerated polypoid mucosa may return to a normal state when the negative pressure is relieved and the irritation of stagnant secretion is gone. Of course the pathologic changes may have become extreme and include caries or necrosis of bone, and in such cases the more extensive operation of Denker advocated by Dr.

Stolte is doubtless the best of the radical ones; but such extreme cases are very rare and the vast majority can be cured by the intranasal operation I have described. The more I employ it the better I like it. It can always be done under cocaine anaesthesia, and the bur alone without the forceps is quite able to enlarge the opening to the desired extent without much pain to the patient. It is surprising how soon suppuration ceases, and my patients have been able to dispense with all washings after a month or 6 weeks, during which time they use only normal salt solution as a cleansing fluid. There is no difficulty, as I have emphasized, in entering the antrum with a straight trephine and straight bur. The nasal wall may be plainly seen after the resection of the inferior turbinate, which is not done as a preliminary procedure several days before, but is a step of the operation performed immediately before opening the antrum. It is easy to pack the latter with a strip of bismuth lint inserted through the opening made. The only possible objection to the method is the destruction of a part of the mucosa of the nasal wall, so that this covering would not be available for a Denker operation, but since the indications for the latter are exceedingly rare, this is not a matter of moment. My patients can wash out their antra and find the opening after the intranasal operation just as readily as Dr. Stolte's patient can. I have them use large Eustachian catheters for the purpose.

DR. STOLTE, closing:—With regard to the preliminary removal of the lower turbinate. This could be done in the same sitting as the radical operation, but I prefer to do it four or five days before, because the operation can be done easier with the patient in the sitting position than in the recumbent or dorsal position. By cauterizing the attachment of the turbinate it can be removed with but little hemorrhage, and then, when we begin the main operation, we have a healed surface, no rough edges to which the tampon can adhere later. The hemorrhage in all these operations is severe, but by this way we can reduce the hemorrhage in the chief operation.

As to the second point, my speedy cure. The healing of the antrum depends on two points. First, that we really remove all the diseased tissue without denuding the bone unnecessarily, at the same time preserving all the healthy lining; thus we can shorten the healing process very much. On the other hand, the floor of the antrum, which is chiefly diseased, we curette thoroughly, covering the denuded bone with a mucous membrane flap.

During the after treatment, we are able to view the entire cavity and may cauterize any point which is likely to produce secretion. Thus we can produce a cure in shorter time than we can with the Luc operation. Naturally there will be still some moisture in these cases after the first two weeks, but there is no pus.

Further, an important point during operation, is not to lacerate the periosteum of the facial wall but to detach it very carefully and fix it afterwards on the remainder of the gingival labial fold. The preservation of a resistant outer wall depends on preserving the periosteum. In this case I succeeded very well in doing that, and I see in this success the cause of my speedy cure. I don't believe, that we will see in a year or two from now, any disfigurement. In two other cases the result is the same as in this case. Of course, we must wait for a year or two before we can speak of any final results. The rapid cure also depends on frequent washings of the antrum with normal salt solution so as not to allow the accumulation of any secretion. This patient did this every two hours.

A Case of Primary Syphilitic Infection of the Nose. By J. T. CAMPBELL, M.D.

DISCUSSION.

DR. W. E. CASSELBERRY:—I have not seen nasal chancre, but I have seen, in three instances, this characteristic fibrinous exudate on the septum and turbinates as a manifestation of secondary syphilis. The exudate was so prominent that nasal diphtheria was suggested at once. It occurs to me that inasmuch as the essayist described this case of initial lesion or chancre as being covered by an exudate, that there is here a point in diagnosis which it will be necessary to keep in mind. I do not question Dr. Campbell's diagnosis in his case, but simply call attention to the observation that a similar exudate is not uncommon in syphilitic lesions in the nose in the secondary period.

A Case of Rhinolith. By THOMAS FAITH, M.D. (*Published in full in this issue of THE LARYNGOSCOPE, page 205.*)

DISCUSSION.

DR. W. E. CASSELBERRY:—I would like to call attention to one point in the diagnosis. A foreign body in the nostril produces suppuration, and a nostrillar discharge of pus, of a chronic nature, is also an indication of sinus suppuration. I have never seen a case

of discharge of pus from the nostril but what I thought of a foreign body in the nose as well as of sinus suppuration.

DR. O. J. STEIN:—Quite recently I removed this indicating foreign body from the nose. With a bone forceps I liberated it from its bed, which was at about the junction of the posterior with the middle third of the inferior turbinate on the right side. It is black in color, and has the appearance of a piece of coke, and had been in the nose for ten years. The only symptom was a bloody serous discharge but no pus, no pain, no excoriation about the nostril. The patient has no knowledge of introducing a foreign body into the nose.

DR. F. G. STUBBS:—About six years ago I saw a man who had been held up and shot. A revolver bullet entered the cheek but was not found at that time. Six months afterward the man had pain and came to my clinic at St. Luke's Hospital Dispensary, and on examination I found the bullet projecting into the inferior meatus. I extracted the bullet easily with a pair of forceps. The man had noticed a discharge from his nose for only about a month before I saw him.

BOOK REVIEWS.

Nasal Sinus Surgery with Operations on Nose and Throat.

By BEAMAN DOUGLASS, M. D., Professor of Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital. Illustrated with 68 full-page Half-tone and Colored Plates, including nearly 100 Figures. Royal Octavo 256 Pages. Bound in Extra Cloth. Price, \$2.50, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

This work presents in convenient compass the subject of Nasal Sinus Surgery especially, and other nose and throat surgery at present engaging the attention of the profession so actively.

The author reviews the anatomy of the nose, laying stress upon points of surgical interest and omitting unnecessary details not important from the operative standpoint.

In the subsequent chapters, each sinus is separately considered. A short historical sketch is given and the special anatomy and various methods of examination and exploration are discussed. The conservative methods of dealing with the diseased sinuses and the various operations are graphically described. Where special operations have been devised by the masters of sinus surgery these are separately presented.

In the part of the work devoted to the external nose and the nasal cavity, the author has not aimed to be all-inclusive. In his selections of the operations to be described, he has abridged the space devoted to these topics without detracting from its value to the reader. It is a matter of some comment that the submucous work on the nasal septum is dismissed with regrettably few words.

This volume is an unusually acceptable addition to the literature of this special nose and throat work. The illustrations deserve very favorable mention. They are beautifully executed and serve to elucidate the subject-matter very clearly. B.

The Surgical Treatment of Chronic Suppuration of the Middle Ear and Mastoid. By SEYMOUR OPPENHEIMER, M. D., New York, Otologist and Laryngologist to Gouverneur Hospital and Mount Sinai Hospital Dispensary; Fellow of the American Laryngological, Rhinological and Otological Society, Etc. One Octavo Volume, 425 pp. illustrated by 45 Half-tone Plates, containing 64 figures and 27 key plates, all engraved from original drawings, prepared from special dissections under the supervision of the author. Publisher, P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, 1906. Price, Cloth, \$6.00; Half-Morocco, \$7.00, net.

This treatise presents very completely the different phases of its subject, being divided roughly between those conditions which may be treated through the external auditory meatus and those requiring some form of external operation. Throughout the various chapters, however, the diagnostic feature has been emphasized.

In the introductory chapter of Part I, the author presents a general view of the conditions which may make surgical intervention necessary in chronic suppurative otitis media. The purposes of the different operations are pointed out. The surgical importance of the various parts of the middle ear is clearly defined, together with indications directing the attention to one or the other of these regions.

The affections of the mucosa and muco-periosteum of the tympanic cavity and ossicles and caries of the tympanic walls are taken up in order in the subsequent chapters. The author's treatment of these subdivisions is progressive. Beginning with the minor conditions he adds the more advanced pathological alterations and correspondingly more extensive surgical treatment and the after treatment.

Part II is devoted to the last stage of the suppurative condition, rounding out the scope of the work by taking up the suppurative process after it has passed beyond the tympanic cavity to the Mastoid. Here again the matter is arranged progressively, beginning with the topographical anatomy of the region and then taking up the simple and complete Mastoid operations with the various modifications.

The final chapter of Part II is devoted to the after-treatment, and presents a description of the various plastic operations so often needed to complete the result of the Mastoid operation and aid in the perfect healing or lessen cosmetic defects which may remain.

The text and plates are of such a character that together they make a working manual which clearly presents the pathological conditions and the operative technique by which these are to be removed or corrected.

